MEETING DEMANDS FOR ANIMAL HEALTH: VETERINARY MEDICINE IN RURAL SOUTHERN ONTARIO, 1862–1939

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Abstract

This dissertation examines animal healthcare in rural southern Ontario from 1862, when animal health lectures were first delivered, to 1939, when the Canadian Army Veterinary Corps disbanded in the lead-up to the Second World War. By examining farmers' access to experiential knowledge and veterinary services in southern Ontario, a region known at the time for its significant contributions to both experiential and institutional knowledge production, this dissertation charts the evolution of veterinary knowledge and the friction that developed between informal, experiential practitioners and a new generation of doctors in the late nineteenth and early twentieth centuries.

During this period, the development of the veterinary profession was non-linear, and the lines between experiential knowledge and institutional knowledge were blurry. Significant changes occurred in animal–human relationships and livestock healthcare practices, with farmers, experiential practitioners, and professional veterinarians all contributing to this transformation. The veterinary profession developed in response to demands for its services, adapting to the needs of both livestock owners and state officials, as well as to social, cultural, and economic drivers. The slow and inconsistent transition from practical, experiential knowledge to professional, institutional knowledge was in part driven by the demand for processes that supported public health regulations and food safety. This shift occurred in the late nineteenth century, when Ontario farmers began concentrating on livestock farming and industrializing their farming practices.

Increasing urbanization also affected the development of animal healthcare practices. As urbanization progressed, milk deliveries increased and horses were used for urban transportation as tractors replaced horses in farmers' fields. This transition occurred during a time when the pure milk movement led consumers to demand pasteurization, an expensive industrial process that required substantial capital investments. Increasing investment in industrial farming and growing concerns over the spread of zoonotic diseases among humans and animals led the state to work with the

Ontario Veterinary College (OVC) to implement training courses for dairy and meat inspectors who were tasked with enforcing public health regulations. OVC prioritized government demand for veterinary services over the burgeoning animal welfare movement in the early twentieth century and interwar period. The decision to focus on livestock healthcare over small animal medicine reflected the profession's view of the connections among upper-class women, small companion animals, and animal welfare movements increasingly concerned with the well-being of pets.

The veterinary profession advocated for stricter legislation to cement its authority in the face of competition from experiential practitioners. However, during the late nineteenth and early twentieth centuries, the distinction between "folk medicine" and institutional knowledge of veterinary pharmacology was not entirely clear. Instead, professional veterinarians often used similar remedies as those used by experiential practitioners. As legislation increasingly marginalized experiential practitioners, OVC developed extension services that provided farmers and private-practice veterinarians with access to its clinics and laboratories. However, at the same time, OVC also required specimens and blood samples to comply with the scientific principles that guided their research and experiments on animals living in OVC's barns or on farms across southern Ontario. This research reveals how connections between experiential animal healthcare practitioners, farmers, veterinarians, and the state in southern Ontario shaped the evolution of animal health practices and the development of veterinary medicine.

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Introduction

"Veterinary Medicines Kept Constantly on Hand. Calls Promptly Attended To, Night or Day" advertised a veterinarian working in Owen Sound, Ontario. James Fowler, an Ontario Veterinary College graduate and veterinary surgeon, placed this ad in 1874 as a direct appeal to farmers.[1] Fowler made such an appeal during a period when farmers often relied on neighbours with experiential knowledge of livestock health or who had their own stock of medicines on hand for emergencies. Fowler's appeal signals the emergence of the veterinary profession in farmers' livelihoods. Years of advocacy efforts by the profession to establish its authority eventually paved the way for present-day veterinary medicine, with practising veterinarians working closely with farmers to cure and prevent livestock disease and injuries.

The profession's struggle for authority was a seventy-seven-year journey—from 1862, when animal health lectures were first delivered in Ontario, to 1939, when the Canadian Army Veterinary Corps (CAVC) disbanded in the lead-up to the Second World War—a result of immense change in the animal–human relationship that accompanied the use of new technologies and mechanization. The struggle ended because there was an economic demand for services, driven by agricultural industrialization and increased public health concerns. The journey was anything but smooth, as farmers were not immediately receptive to the profession's top-down approach. Farmers valued experiential knowledge and the more affordable services of experiential practitioners, which were often part of an entrenched rural labour exchange system. Popular experiential knowledge in the form of manuals and brochures were also readily accessible—long before veterinarians populated the countryside.

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[1] James Fowler, Veterinary Surgeon Advertisement, Business, Promotional Materials, Bruce County Museum & Cultural Centre Collection, 966-31-4, PF461 S1 F1, Grey Roots Museum & Archives, Owen Sound, Ontario.

The veterinary profession evolved in response to economic demand for its services. To meet this demand, the Ontario Veterinary College (OVC) transformed its curriculum with the aim of increasing enrolment and the number of veterinarians practising in Ontario. As professional veterinarians gained experiential knowledge through the application of veterinary science methods and implemented outreach and extension services, they strengthened collaboration with farmers. While veterinary medicine reluctantly took on the care of companion animals during this period of agricultural industrialization and livestock production, the profession was born out of the needs of livestock husbandry, initially focusing on the treatment of horses and later expanding to support livestock farming.

This dissertation aspires to go beyond traditional veterinary histories that highlight veterinary progress while overlooking the slow adoption and availability of veterinary medicine in rural communities. With a focus on livestock healthcare in rural Ontario and the non-linear path to the professionalization of veterinary medicine, it explores the realities of livestock healthcare on the Ontario rural farm, as well as the economic motivations behind livestock healthcare practices and their evolution, through three key developments: access to knowledge in rural farming communities, ranging from popular experiential experts to professional and institutional veterinarians; increased public health regulations; and the industrialization of livestock farming and economic nation-building.

The central argument throughout this dissertation focuses on access to scientific knowledge and veterinary services in rural farming communities. As industrial farming advanced, agricultural knowledge evolved and farmers began adopting business practices. However, the transition in veterinary medicine from practical, experiential knowledge to professional, institutional knowledge depended heavily on access to resources. This access became a prominent driver of how farmers practised livestock healthcare. From the 1860s, with the establishment of rural post offices, to the

late nineteenth century, when travelling book agents and subscription services emerged, followed by early twentieth-century catalogue sales, farmers slowly gained access to information. However, during the interwar period, limited, inconsistent access to veterinary services persisted in many rural communities. Professional and state veterinarians often overlooked these challenges, attempting to discredit experiential experts in favour of professional veterinary services. As a result, farmers initially faced limited or no access to professional veterinary medicine. In the southern Ontario region, popular experiential knowledge competed with professional institutional knowledge disseminated by two institutions, the Veterinary Correspondence School in London, Ontario, and the OVC in Toronto and later Guelph. Farmers continued to value experiential knowledge for some time despite efforts by the provincial and federal governments to regulate livestock healthcare.[2] Initially, farmers relied on tried-and-true methods delivered by neighbours with expertise. By the late nineteenth century, they extended their trust to encompass the vast network of experiential knowledge that could be found in popular publications. Only after veterinarians provided experiential evidence for their scientific methods did farmers—initially wealthy breeders of purebred livestock, then industrialists, and finally individual farmers—begin to accept veterinary science and invest in veterinary services.

The second central argument contends that the professionalization process was non-linear, with blurred lines between experiential knowledge and institutional knowledge as the veterinary profession worked to diminish the value of experiential expertise during this period. The Ontario and federal governments implemented public health regulations that helped standardize approaches to limiting the spread of zoonotic diseases. Drawing on methods from One Health, a field of inquiry that emphasizes the interdependence between human, animal, and environmental health, this

[2] Joanna Swabe, *Animals, Disease, and Human Society: Human-Animal Relations and the Rise of Veterinary Medicine* (London and New York: Routledge, 1999), 71.

dissertation explores the expansion of livestock health practices within the broader development of public health initiatives. It seeks to understand the priorities of farmers, veterinarians, and regulators, and—to the extent the sources allow—environments and animals themselves.[3] In Canada, particularly in southern Ontario (the birthplace of the veterinary institution in North America), the veterinary profession was shaped by a national framework focused on agricultural advancement, economic growth, industrialization, and increased state regulation. In their management of livestock health, veterinarians also played a role in developing and implementing public health regulations to protect people by controlling the spread of zoonotic diseases.

Early foundations of the One Medicine and later One Health movements, which emerged in the interwar period and the 1980s, respectively, demonstrate the historical connection between human and animal medicine.[4] The environment and its health was just as much a concern of early health practitioners (during this period when they focused on treating external environments), who wanted to understand environments and environmental processes to manage and transform them for the sake of improving animal and human health.[5] The interdependence between human and animal health in shared environments is crucial to understanding the development of veterinary medicine, since the profession developed according to anthropocentric rather than humanitarian values (like human medicine). Throughout this dissertation, I use a similar framework to examine the interdependence between animals, environments, experiential experts, and later veterinarians, and their effects on farmers' efforts to maintain livestock health.

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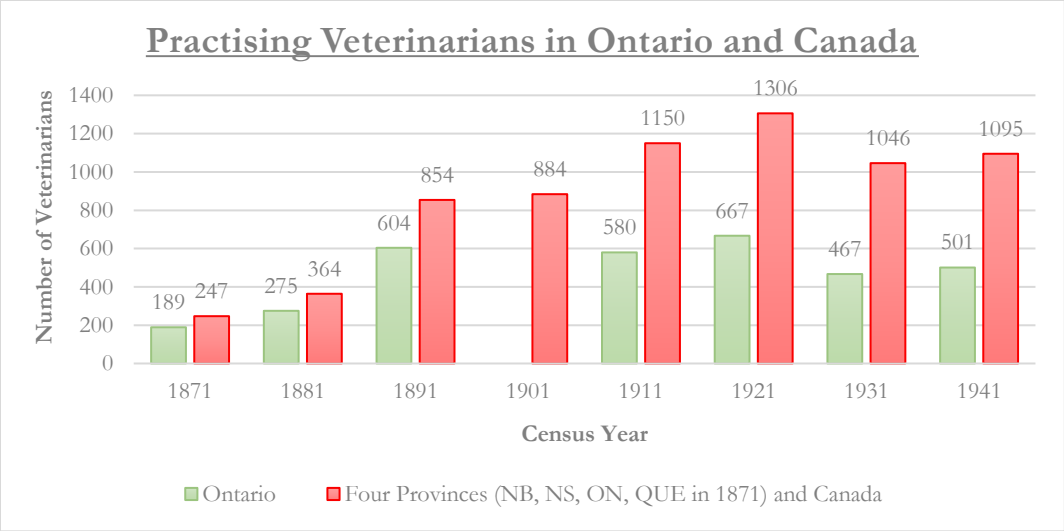
[3] Abigail Woods, Michael Bresalier, Angela Cassidy, and Rachel Mason Dentinger, *Animals and the Shaping of Modern Medicine: One Health and its Histories* (London, UK: Palgrave MacMillan, 2017), 194–227.
[4] Abigail Woods and Michael Bresalier, "One Health, Many Histories," *Veterinary Record* 174, no. 26 (2014): 650–54.
[5] Woods and Bresalier, "One Health, Many Histories," 650–54; Woods et al., *Animals and the Shaping of Modern Medicine*; R. G. W. Kirk and M. Worboys, "Medicine and Species: One Medicine, One History?" in *The Oxford Handbook of the History of Medicine*, ed. Mark Jackson (Oxford: Oxford University Press, 2011), 561–77.

The third constant current argues that the veterinary profession played a crucial economic role in the industrialization of livestock farming and in nation-building. Through the late nineteenth and early twentieth centuries, Canada and Ontario had primarily agricultural economies.[6] By ensuring the continued productivity of livestock animals for the material benefit of people, the veterinary profession, through both institutions and professional associations, found itself adjusting and refocusing to meet the economic demands of farmers while developing and implementing public health regulations related to livestock healthcare. As an example, when there were few rural veterinarians in the late 1800s, farmers had fewer animals (see Tables I, II, and III). As access to veterinarians grew alongside industrialization and increased regulations, the types of livestock on farms changed slightly (with an increase in cattle and, later, poultry farming), and their numbers increased. The transition from personal interactions with individual animals to managing larger numbers of animals on farms marked a shift in animal–human relationships that led to what veterinarians refer to as herd health and preventive veterinary medicine. This shift restricted a farmer's ability to observe an animal's health symptoms. Veterinarians responded accordingly by offering systemic oversight, laboratory services, and preventive medicine. This evolution in veterinary medicine not only involved changes distinct to veterinary medicine and animal healthcare, but also reflected broader developments that transformed Canadian society in the late nineteenth and early twentieth centuries, through the interwar period.

[6] Peter A. Russell, *How Agriculture Made Canada: Farming in the Nineteenth Century* (Montréal: McGill-Queen's University Press, 2012); Ruth Sandwell, *Canada's Rural Majority: Households, Environments, and Economies, 1870–1940* (Toronto: University of Toronto Press, 2016).

Table I: Number of practising veterinarians in Ontario compared to all of Canada



Source: Census of Canada, 1870–71, vol. 2, 289; 1880–81, vol. 2, 308; 1890–91, vol. 2, 167 and 190; 1911, vol. 6, 8; 1921, vol. 4—Occupations, 9 and 178–179; 1931, vol. 7—Occupations and Industries, 132, 72, and 876; 1941, vol. 7—Gainfully Occupied by Occupations, Industries, etc., 32 and 42.

Historiography

The historiography of veterinary medicine, like the professionalization of veterinary medicine, begins with discussions about animals and the spread of disease between animals and humans. In the early 1990s, historian Lise Wilkinson looks at the history of animal disease through the development of comparative medicine. Wilkinson argues that studying animal disease provided opportunities for experimentation on animals that did not exist in cases of human disease. For the purposes of this dissertation, her analysis of zoonotic diseases, particularly glanders and anthrax, was valuable. Here, she contextualizes the development of public health regulations and scientific technologies, such as the microscope, to identify global developments in the control of zoonotic diseases.[7] Wilkinson argues that animal experimentation was not necessarily rooted in the study of human diseases, but rather in the study of diseases in animals of economic importance to humans. However, over time,

[7] Lise Wilkinson, *Animals and Disease: An Introduction to the History of Comparative Medicine* (Cambridge: Cambridge University Press, 1992), 115–146.

as scientists discovered the zoonotic nature of some diseases, they realized how these studies could be illuminating for humans as well.[8]

By the late 1990s, Joanna Swabe's research builds on Wilkinson's work on animal disease by focusing on the human–animal relationship and the relationship between animal domestication and the "veterinary regime," which she argues told a "tale of dependency and disease."[9] Swabe connects the exploitation of animals "not in the derogatory or moralistic sense" but rather within the historical context of domestication and dependency for food, fibre, fuel, and labour, with a concern for the health of the animal "resources" that encouraged the veterinary profession to develop from the practical skills and experiential knowledge of farriers, animal owners, "horse doctors," and "cow leeches" to the professional knowledge of veterinary science held by inspectors, policy-makers, and enforcement officers.[10] Despite this professional growth and attention to preventing and controlling the spread of zoonotic diseases, such as glanders and anthrax, Swabe underscores that in the mid- to late nineteenth century, "when you send for the veterinary surgeon, order a grave to be dug, and prepare to pay a long bill."[11] Through the industrialization of animal agriculture, Swabe further argues that animal health implications for humans did not motivate the "veterinary regime" to undergo processes like decreasing density. Instead, treatments such as tail-docking and de-beaking, and later in the mid-twentieth century, antibiotics were used to prevent infections.[12]

The historiography of veterinary medicine primarily covers British, French, and U.S. efforts to establish veterinary authority. In comparison, Canadian histories are fairly scant. C. A. V. Barker, a veterinarian and OVC faculty member, authored several professional histories on the college, provincial and federal veterinary associations, and the CAVC. He relied extensively on association

[8] Wilkinson, *Animals and Disease*, 191.
[9] Swabe, *Animals, Disease and Human Society*, 23.
[10] Swabe, *Animals, Disease and Human Society*, 7 and throughout.
[11] Swabe, *Animals, Disease and Human Society*, 100.
[12] Swabe, *Animals, Disease and Human Society*.

and institutional records to illustrate how the profession navigated challenges to establishing its authority in animal husbandry.[13] This approach is important to understanding why the veterinary profession was a "second-class profession" in the early twentieth century.[14]

Historian Tracey L. Adams argues that veterinary surgery had been state-regulated in the late nineteenth century.[15] By 1920, the veterinary profession, like medical doctors, lawyers, pharmacists, land surveyors, accountants, among others in the early twentieth century, was self-regulating.[16] However, they did not hold the same regulatory privileges as their medical counterparts.[17] Instead, Adams argues, the veterinary profession was part of a trend wherein the Ontario government established several medical profession (for example, optometry, embalming, and "drugless practice") with an appointed board. These professions held less authority over entrance to practise and less disciplinary powers, and without a specific scope of practices and privileges.[18] Adams contends that this was the result of the medical profession's power to "curtail the privileges" of competing professions and the Ontario governments "reluctance to delegate authority."[19] From 1862–1939, the veterinary profession sought to establish its authority, much like the medical profession which, as historian Don Wright suggests, created monopolies in highly defined sectors of the medical labour market.[20]

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[13] C. A. V. Barker, "The Ontario Veterinary College: Temperence Street Era," *The Canadian Veterinary Journal* 16, no. 11 (November 1975): 319–328; C. A. V. Barker and Margaret Evans, *Century One: A History of the Ontario Veterinary Association, 1874-1974* (Guelph: C.A.V. Barker & Associates, 1976); C. A. V. Barker and T. A. Crowley, *One Voice: A History of the Canadian Veterinary Medical Association* (Ottawa, Ontario: Canadian Veterinary Medical Association, 1989); C. A. V. Barker and Ian Barker, *A History of the Canadian Army Veterinary Corps in the Great World War 1914-1919 by Cecil French* (Guelph: Crest Books, 1999).
[14] Tracey L. Adams, *Regulating Professions: The Emergence of Professional Self-Regulation in Four Canadian Provinces* (Toronto: University of Toronto Press, 2018), 169.
[15] Adams, *Regulating Professions*, 166.
[16] Adams, *Regulating Professions*, 162.
[17] Adams, *Regulating Professions*, 169.
[18] Adams, *Regulating Professions*, 169.
[19] Adams, *Regulating Professions*, 168.
[20] Donald Wright, *The Professionalization of History in English Canada* (Toronto: University of Toronto Press, 2019), 4.

Similarly, J. B. Derbyshire and Thomas Dukes wrote a number of articles on "That Other Branch of Medicine" in Canada, which Derbyshire feared had become merely reprints of English texts in a Canadian context.[21] As shown in this dissertation, initially British veterinarians, in particular those who trained in Edinburgh before immigrating such as Andrew Smith (OVC) and Duncan McEachran (Montréal Veterinary School), had significant influences on the development of veterinary medicine in Canada. Derbyshire and Dukes, both veterinarians and historians, went on to document the advances made to address the spread of challenging diseases. Dukes, in the same current as Wilkinson's work on comparative medicine, went a step further than Derbyshire, by arguing that animal medicine was a key component of human medicine—the two fields overlapped significantly—and must be considered within the broader context of public health. In his assessment, veterinary medicine's primary purpose, that of human health and welfare, was often overlooked.[22]

All of these studies offer a critical analysis of Canada's professional contributions to veterinary medicine. Yet, they overlook the vital connection between farmers, livestock healthcare, and the growth of industrial agriculture in Canada. Some also fail to consider the human factors that influenced livestock healthcare practices in the farming environments where they occurred.

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[21] J. B. Derbyshire, "Pathobiology at the Ontario Veterinary College--the First 100 Years," *The Canadian Veterinary Journal* 40, no. 10 (October 1999): 737–43; J. B. Derbyshire, "The Eradication of Glanders in Canada," *The Canadian Veterinary Journal* 43, no. 9 (September 2002): 722–726; J. B. Derbyshire, *An Introduction to Canadian Veterinary History*, 2nd ed. (Guelph: Department of Pathobiology, Ontario Veterinary College, 2003); J. B. Derbyshire, "Pioneers of Canadian Veterinary Medicine," *Veterinary Heritage: Bulletin of the American Veterinary History Society* 34, no. 2 (2011): 33–40; Thomas W. Dukes, "The History of Veterinary Medicine," *The Canadian Veterinary Journal* 30, no. 3 (1989): 213; Thomas W. Dukes, and B. Labonté, "A Hundred Years of Importation: The First Animal Quarantine Station in North America; Lévis, Québec, 1876–1982," *The Canadian Veterinary Journal* 32, no. 6 (1991): 375–81; Thomas W. Dukes, "A Glimpse at the Canadian Army Veterinary Corps," *Veterinary History* 7, no. 3 (1993): 86–90; Thomas W. Dukes, "That Other Branch of Medicine: An Historiography of Veterinary Medicine from a Canadian Perspective," *Canadian Bulletin of Medical History* 17, no. 1 (April 2000): 229–243; Thomas W. Dukes, "On the Middle Road: Queen's University's Foray into Veterinary and Comparative Medicine," *The Canadian Veterinary Journal* 48, no. 9 (2007): 947–52.

[22] Niall B. Finnegan, "Opportunities for Veterinarians in the Twenty-first Century," *Journal of the American Veterinary Medical Association* 209 (1996): 215–17 in Dukes, "That Other Branch of Medicine: An Historiography of Veterinary Medicine from a Canadian Perspective," 230; Dukes, "That Other Branch of Medicine: An Historiography of Veterinary Medicine from a Canadian Perspective," 230.

Veterinarian and historian Susan Jones builds on Duke's call to consider veterinary medicine within the broader context of comparative medicine in *Valuing Animals*. Though her book focuses on the American historical context, it contributes to our understanding of how humans valued animals based on each species' contribution to human work, leisure, or companionship.[23] Similarly, Margaret Derry examines the anthropocentric values that influenced craft breeders' desire for specific genetic traits, advancements made by agricultural scientists, and industrialists' investment in scientific innovation.[24] The Jones and Derry studies offer invaluable insights on the social and cultural significance of animals and thus on the animal–human relationship, with Jones highlighting how changing values motivated veterinarians to redefine their profession over time.[25] Jones's study examines the evolving social and cultural values that shaped economic demand and advances in the veterinary profession. However, it offers a balanced perspective on both the conflict as well as the similarities and differences, cooperation and resistance, and the exchange of experiential and scientific knowledge among farmers, experiential experts, and professional veterinarians. This study also examines how access to scientific knowledge and veterinary services has shaped individual responses and decision-making within a veterinary marketplace.

A key omission of these studies is the historic importance of North America's first veterinary institution, the Ontario Veterinary College (OVC), and the global influence of the London Veterinary Correspondence School. Also ignored is the uniqueness of the Canadian experience, the historical contributions of Canadian farmers and veterinary medical professionals, and the significance of Canada's agricultural industry as a national economic initiative. The development of veterinary medicine in Ontario was non-linear, blurred by social, cultural, and economic drivers that

[23] Susan Jones, *Valuing Animals: Veterinarians and Their Patients in Modern America* (Baltimore: The Johns Hopkins University Press, 2002).
[24] Margaret Derry, *Art and Science in Breeding: Creating Better Chickens* (Toronto: University of Toronto Press, 2012).
[25] Jones, *Valuing Animals*, 3.

fuelled the contested path towards the professionalization of veterinary medicine. Before veterinary services were easily accessible and made sense as investments, farmers valued the experiential knowledge of their neighbours and a wider network of experiential knowledge exchange in global publications. Initially in this period, some preferred tried-and-true treatments over costly veterinary services, both in terms of monetary cost and proximity. Despite their condemnation of those who practised without "standardized" veterinary techniques during this period, the profession coalesced with experiential practitioners for some time, unlike the stark contrast or change portrayed in some histories of scientific progress.

In their most recent work, *A Concise History of Veterinary Medicine*, Susan Jones and Peter Koolmees present the first comprehensive global history of veterinary medicine, from antiquity to the present day. They argue that animal healing has to be considered within the historical contexts of different animal healers and in response to pressures "between economic, military, and cultural value, status and uses of domesticated animals."[26] Jones and Koolmees argue that the model of veterinary medicine practised globally in institutions today was established in the late 1700s during the French and American revolutions. This model, they argue, reflects a time when soldiers found themselves on the front lines of "war and imperial invasions."[27] During the First World War, the CAVC's work on disease education and prevention measures earned the profession recognition among "military authorities" for its approach to veterinary practices.[28] On the Canadian home front, Professor W. J. R. Fowler, a renowned professor of equine surgery, claimed that an elevated demand for horses and increased prices for meat and dairy made farmers "anxious to have veterinarians keep their animals in good condition."[29] In Canada, early foundations of this institutional model were

[26] Susan D. Jones and Peter A. Koolmees, *A Concise History of Veterinary Medicine* (Cambridge: Cambridge University Press, 2022).
[27] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 1.
[28] Barker and Evans, *Century One*, 110.
[29] Barker and Evans, *Century One*, 110.

developed in 1862. However, it was the First World War that helped establish the profession's footing and build trust in the veterinary profession, accelerating its professionalization in Canada following the war. Jones and Koolmees' important work has narrowed the gap so evident in the institutional and national histories of veterinary medicine. Despite the book's comprehensive coverage, the role of changing environments and the interdependence among animal, human, and environmental health have been left underdeveloped. By focusing on animal–human relationships in shared environments, this study offers a more complete illustration of how farmers and experiential experts treated livestock before veterinary services were accessible in rural communities and the slow, uneven transition to professional veterinary medicine.

Veterinary medicine developed according to the needs of farmers and the state. As public health officials' concerns over the spread of zoonotic disease heightened, veterinary medicine became more distinct. However, the practices of experiential experts and professional veterinarians were not entirely dissimilar. Rather, folk and traditional practices (and ingredients) used to treat animals provided the foundation for many veterinary developments. Though professional veterinarians challenged the usefulness of experiential practitioners' treatments, there was much overlap for some time. James Fisher, in his historical study of books, power relationships between farm labourers and landowners, and agrarian capitalism, argues that not all farmers were for or against "book learning." An "asymmetric" distribution of knowledge, with farmers holding the bulk of animal healthcare knowledge, meant that landowners sought knowledge of agrarian practices for themselves without needing to rely on farmer's experiential knowledge.[30] Though Fisher focuses on eighteenth-century Britain, his study offers valuable insight into the overlap in knowledge and adoption of folk knowledge for scientific purposes and the professionalization of knowledge.

[30] James Fisher, *The Enclosure of Knowledge: Books, Power and Agrarian Capitalism in Britain, 1660–1800* (Cambridge: Cambridge University Press, 2022): 50 and 262.

Examining this demand for knowledge offers a lens into what livestock health looked like on farms and how this changed from the late nineteenth century to the interwar period.

This dissertation examines the different approaches to livestock healthcare by farmers, experiential practitioners, and institutionally trained veterinarians in rural southern Ontario from the late nineteenth century to the interwar period. It explores the tensions and forms of cooperation that arose between experiential and professional knowledge holders and practitioners as they worked to deliver livestock healthcare during a period of intense industrialization. It examines how the animal–human relationship evolved from humans interacting with labour animals, which helped them clear land and work fields, to human investment in livestock production and the increase in livestock farming, which ultimately determined how this evolution shaped livestock healthcare. More broadly, it provides evidence of how social, cultural, and economic changes in Canada affected the rural farming landscape.

Before the field of animal history emerged a few decades ago, historians often referenced animals in passing or within anthropocentric historical narratives. Notably, environmental historian Alfred Crosby documented the influence that "portmanteau biota" (animals, plants, and pathogens) from Europe had on "New World" environments during processes of colonialism.[31] Crosby and other environmental historians who expanded on his work argue that the introduction of livestock farming in North America in the fifteenth and sixteenth centuries played an instrumental role in helping Europeans establish colonies.[32] Additionally, the exchange of knowledge also took place across Crosby's transoceanic and William Cronon's hinterland-metropolis networks.[33] In the case of

[31] See Alfred W. Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492* (Westport, CT: Greenwood Publishing Co., 1972); Alfred W. Crosby, "Virgin Soil Epidemics as a Factor in the Depopulation of the Americas," *The William and Mary Quarterly* 33 (April 1976): 289–299; and Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900* (Cambridge: Cambridge University Press, 1986).
[32] Virginia DeJohn Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America* (Oxford: Oxford University Press, 2004); Liza Piper and John Sandlos, "A Broken Frontier Ecological Imperialism in the Canadian North," *Environmental History* 12, no. 4 (2007): 759–795.
[33] William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991).

veterinary medicine, knowledge flowed from British and French institutions to farms across Canada and from metropolises to the hinterland. These networks of exchange defined the flow of knowledge as much as it facilitated the exchange of portmanteau biota, natural resources, and commodities. Settlers believed that livestock farming would improve the land and benefit its inhabitants. They used animals to displace Indigenous communities and eventually to establish their own family farms, which involved clearing trees and cultivating fields.[34] However, in these environments, organisms competed with native species, causing ecological change. Elinor Melville, another environmental historian, noted the ecological revolution that occurred in the fifteenth century, when the Spanish introduced sheep into Mexico.[35] Similarly, in the late nineteenth and early twentieth centuries, settlers believed that introducing livestock farming would support nation-building projects and prove conducive to farmers' efforts to "improve" or develop their land and build a profitable family farm business.

The introduction of new animal species and the prioritization of specific genetics altered animal bodies and transformed rural environments in Canada. For example, Margaret Derry examines how craft breeders and scientists genetically altered livestock to serve social, cultural, and economic purposes, similar to this study's analysis of drivers that influenced the development of veterinary medicine. Derry argues that cultural norms affected craft breeders' approach to producing animals before the scientific community started effecting standardized breeding practices in the second half of the twentieth century.[36] However, Sally McMurray argues that scientific advancement, in the form of technological innovation affected how cattle were bred for agricultural purposes

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[34] Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America*, 10–11.
[35] Carolyn Merchant first introduced the concept of ecological revolution in "The Theoretical Structure of Ecological Revolutions," *Environmental Review* 11, no. 4 (1987): 265–274. Merchant's concept illustrates how human relations transformed non-human nature. Melville expands this concept to understand how non-human animals influenced non-human nature. Elinor Melville, *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico* (Cambridge: Cambridge University Press, 1994).
[36] Derry, *Art and Science in Breeding Chickens: Creating Better Chickens*.

before the end of the nineteenth century.[37] Essentially, this earlier development resulted from humans placing a higher value on cattle than on poultry. While farming practices in animal breeding and healthcare reflected changing anthropocentric values, they did not only reflect rural settlers' values. Virginia DeJohn Anderson argues that animal agency also affected people and their surrounding environments.[38] In this dissertation, expressions of animal agency reveal instances of animal suffering and provide a lens for understanding what farmers may have observed and how changes to animal–human relationships shaped approaches to livestock health challenges.

Government initiatives also influenced livestock healthcare practices. In Canada, rural settlers faced pressure from federal and provincial governments to adopt "mandatory" homestead and land policies. However, Ruth Sandwell argues that many farmers used these policies for their own purposes.[39] Rural settlers, Sandwell argues, valued reliable, "secure" practices over risk, "ease over hard work," and "modest sufficiency over accumulations of wealth."[40] This was contrary to the viewpoint of the federal government, which valued commercial family farms that functioned as businesses. However, Sandwell refers more broadly to rural settlement, and the same principles apply to Ontario's farmers, who trusted tried-and-true experiential knowledge over unfamiliar scientific methods. Rural farmers also placed value on their local connections to help them sustain their farms and cherished the ability to make decisions about their farming practices, including the health of their livestock.[41] Decisions were based on both cost and access to knowledge and expert services (first informal, experiential practitioners, then professional and institutional expertise). This dissertation examines the individual decisions that farmers made based on their access to and

[37] Sally McMurray, *Transforming Rural America: Dairying Families and Agricultural Change, 1820-1885* (Baltimore: The Johns Hopkins University Press, 1995).
[38] Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America*.
[39] Ruth Sandwell, *Contesting Rural Space: Land Policy and the Practices of Resettlement in Saltspring Island, 1859–1891* (Montréal and Kingston: McGill-Queen's University Press, 2005), 29.
[40] Sandwell, *Contesting Rural Space*, 6.
[41] Catharine Wilson, *Being Neighbours: Cooperative Work and Rural Culture, 1830–1960* (Montréal and Kingston: McGill-Queen's University Press, 2022).

acceptance of veterinary knowledge and services. It analyzes how these decisions changed over time to illustrate a more complete picture of the dynamics—including the coalescence, resistance, separation, cooperation, and eventual collaboration between farmers and professional veterinarians—that influenced animal healthcare practices in rural communities and the professionalization of veterinary medicine.

Historical Context and Theory

While human medicine was driven by a broader humanitarian concern for the health of people, this was only partially true for veterinary medicine. Veterinary medicine was more anthropocentric in its development, supporting animal health for the benefit of humans. It benefited from influential developments in human medicine, such as germ theory and comparative medicine approaches to combatting zoonotic diseases. However, its purpose was driven by anthropocentric (often economic) factors. The main human use of veterinary medicine was livestock husbandry, or what is referred to throughout this dissertation as livestock healthcare. Livestock or animal husbandry refers to the daily practices associated with breeding, raising, and managing livestock production. For this dissertation, livestock healthcare refers to the practices adopted by farmers, experiential experts, and professional veterinarians to care for livestock that were affected by injury or disease.

To understand the drivers that shaped the veterinary profession, this dissertation is rooted in the changing dynamics of family farms, which historian Peter A. Russell asserts are fundamental to grasping Canadian agriculture.[42] Family farm structures were imperative to agricultural development. Each family farm was a "diverse centre for economic activity, not uniquely or exclusively tied to farming" or a single source of income.[43] Building a family farm became a farm family's life's work. It

[42] Russell, *How Agriculture Made Canada*, 277.
[43] Russell, *How Agriculture Made Canada*, 30; Douglas McCalla, *Planting the Province: The Economic History of Upper Canada* (Toronto: University of Toronto Press, 1993), 82, 87–88.

was not immediate, and it involved numerous decisions and endeavours. Each decision illustrates what farmers thought might help their farms prosper. In the early nineteenth century, Russell argues that farmers in Lower and Upper Canada experienced "the limits of good farmland … and the consequent need to find alternatives." However, the two colonies faced this challenge at "different times, in different circumstances, and with contrasting modes of nationalism."[44] In Ontario, farming began much later than in Quebec; however, it developed quickly as a result of high immigration and strong demand for wheat, according to Russell. During the nineteenth century, this resulted in an "expansionist land-hungry nationalism."[45] Consequently, profitable land uses became a priority for farmers, who adapted their agricultural practices accordingly. In more arid climates for example, farmers invested in livestock farming because they determined it would be the best long-term option for their farm's survival in this type of climate.[46] In Ontario, farmers produced dairy products and meat in addition to "a substantial base of field crops," unlike Quebec, which replaced crop production with livestock farming, which proved "inadequate for domestic needs."[47]

Initially, settlers were encouraged to clear the land and produce grain surpluses for the British market. "Assured of bourgeois property rights, without a civil law [to split] family landholdings," Russell argues that "the Ontario farmer got the full value for his crop," which encouraged farmers to reinvest in their farms' "productive capacity."[48] This produced both backward, such as farm equipment or patent medicine manufacturing, and forward linkages, such as flour milling or the role of meat and dairy inspectors, that fuelled Ontario's industrialization.

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[44] Russell, *How Agriculture Made Canada,* 3.
[45] Russell, *How Agriculture Made Canada,* 4.
[46] Russell, *How Agriculture Made Canada,* 274.
[47] John Isbister, "Agriculture, Balanced Growth, and Social Change in Central Canada since 1850: An Interpretation," in *Perspectives on Canadian Economic History,* eds. Douglas McCalla and Michael Huberman (Mississauga: Copp Clark Pitman, 1987), 64, in Russell, *How Agriculture Made Canada,* 84.
[48] Russell, *How Agriculture Made Canada,* 83.

Similarly, during this period of investment in technological innovations, farmers made decisions about what and how they would farm based on the information available to them at the time. Farmers' decisions in response to the "land frontier" are crucial to understanding the "political and economic choices made by Canadians after mid-century."[49] In many cases, farmers' reliance on their son's labour came with the expectation that the son would be rewarded by setting up a farm of his own, thus driving the frontier of farm settlement.[50] Industrialization offered relief to land use problems.

In Ontario, "a large minority of commercial farmers" began focusing on livestock farming after the "rude shock" of wheat collapse in 1857.[51] Many farmers, according to Russell, were "caught overextended," with mortgages on land which value had fallen substantially.[52] From the early to mid-nineteenth century, farmers were seeking the most profitable means of producing livestock, which sometimes involved decisions based on proximity and cost. According to Russell, Ontario farmers could afford to transition to livestock farming following the drop in wheat prices because it occurred when farmers were nearing the peak of clearing enough land to sustain their families.[53] They moved away from wheat farming, due to dropping prices, soil exhaustion, and long-term issues with wheat blight.[54] They moved to dairy or livestock farming, which required capital investment, however. The transition began in the mid-nineteenth century, when capital reserves were high and urban employment opportunities were rising. Ontario farmers' indebtedness was the result of "asset acquisition rather than consumption."[55] This family farm structure transitioned according to farmers' expansion into dairy, beef, and pork farming.[56]

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[49] Russell, *How Agriculture Made Canada,* 3.
[50] Russell, *How Agriculture Made Canada.*
[51] Russell, *How Agriculture Made Canada*, 280.
[52] Russell, *How Agriculture Made Canada*, 4.
[53] Russell, *How Agriculture Made Canada,* 85 and 93.
[54] Russell, *How Agriculture Made Canada,* 101.
[55] Russell, *How Agriculture Made Canada,* 10.
[56] McCalla, *Planting the Province: The Economic History of Upper Canada*, 74; Russell, *How Agriculture Made Canada,* 129.

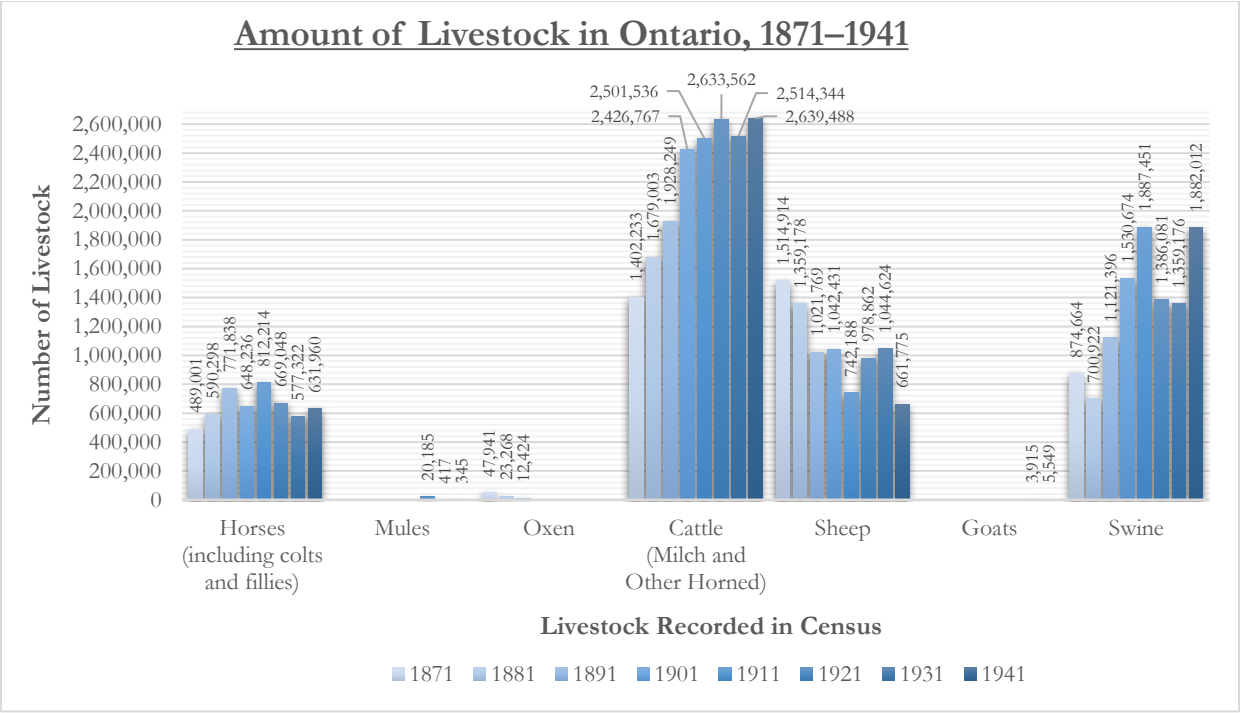
Settlers' concentration on clearing trees led them to value oxen over dairy or beef cattle. However, Russell argues that the 1854 *Reciprocity Treaty* opened the "burgeoning American market," which created demand for beef cattle, a result of Ontario farmers' importation of American Shorthorns. "By 1860," he claims, "Ontario had changed from a livestock-importing to a livestock-exporting region."[57] The end of the agreement in 1866 restricted Canadian cattle from entering American markets. However, in the meantime, Russell argues the introduction of machinery from the United States during this period continued to alleviate the need for labour animals, which paved the way for livestock farming and dairying.[58] An 1878 British ban on American cattle was expected to create demand for Canadian cattle according to Russell, however, "as the transportation revolution proceeded worldwide," other countries such as Argentina, Australia, and New Zealand squeezed Ontario's market share. At the end of the nineteenth century, Canada's urban growth created demand for dairy products. However, Russell asserts that since the end of the nineteenth century, Canadian dairy farmers have relied on tariffs to protect their "home market against overseas competitors."[59] For many farmers, safeguarding the health of their livestock became a top priority, as they depended on healthy animals for their family's sustenance and, in some cases, a profitable surplus.

From the mid-nineteenth to the early twentieth centuries, experiential and institutional knowledge of veterinary science overlapped in many ways. Both pillars of knowledge sought to understand treatments for common ailments affecting the livestock that people relied on most. With the growth of the dairy industry, there was a rise in the number of milch (dairy) cows in Ontario from 1871 to 1931 (Table II). The number of horses remained steady through this period as they transitioned from labouring in fields to transporting milk, despite an increase in tractors from 6,942

[57] Russell, *How Agriculture Made Canada,* 98.
[58] Russell, *How Agriculture Made Canada,* 98.
[59] Russell, *How Agriculture Made Canada*, 99.

in 1921 to 18,318 in 1931.[60] This transition away from oxen and horsepower to the industrialization of farming practices and animal agriculture—and an increase in poultry production in the lead-up to 1931, as shown in Table III—influenced the focus of veterinarians' practices. Driven by economic opportunity in these new sectors of livestock agriculture, professional and institutional veterinarians aimed to provide scientific veterinary services to farmers.

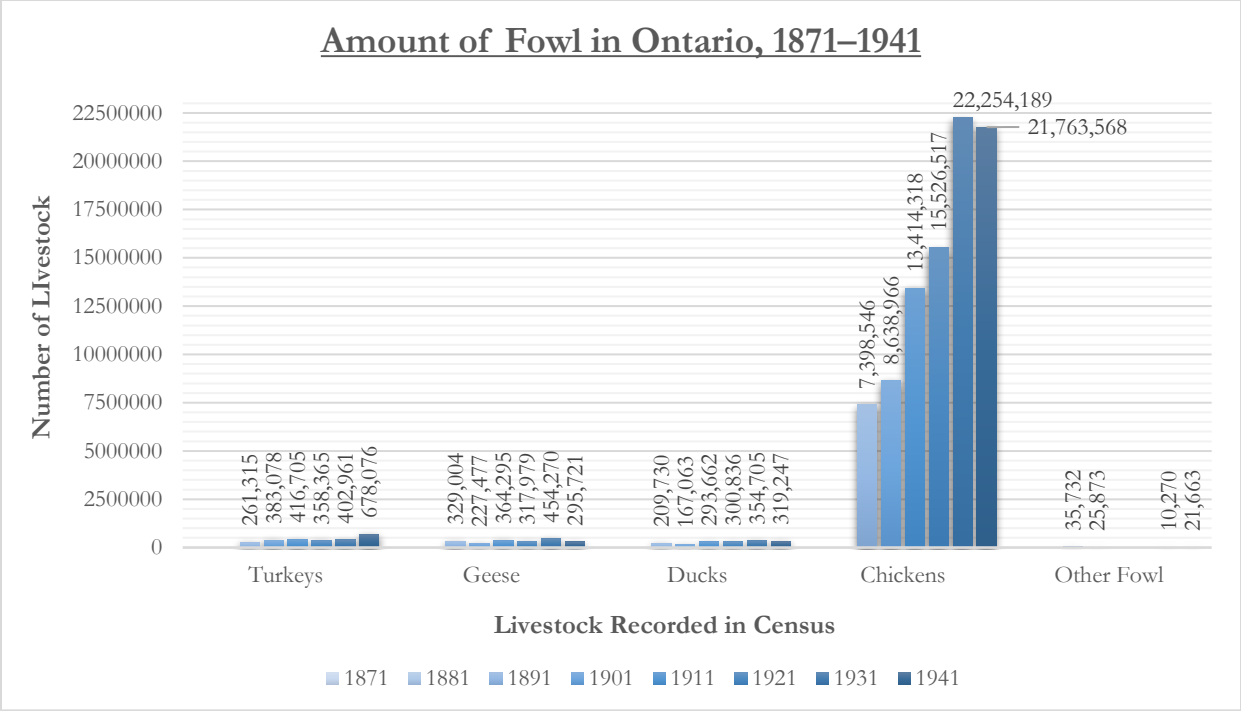
Table II: Number of non-fowl livestock in Ontario, 1871–1941



Source: Department of Agriculture. "Census of Agriculture, 1871–1911 [Ontario] [Excel]," Borealis, 2023. https://doi.org/10.5683/SP3/2YVN82*; Census of Canada,* 1921, vol. 5—Agriculture, 709; 1931, vol. 8—Agriculture, 454; 1941, vol. 8—Agriculture, 954.

[60] Russell, *How Agriculture Made Canada*, 242.

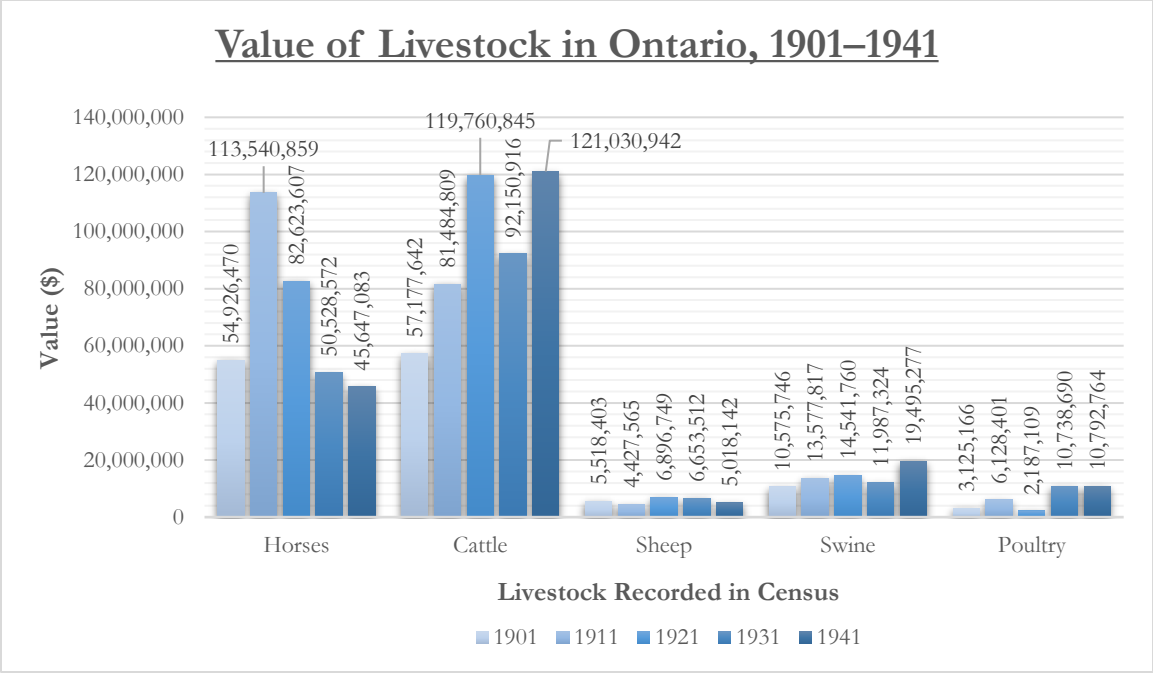
Table III: Breakdown of Fowl numbers in Ontario, 1871–1941



Source: Department of Agriculture. "Census of Agriculture, 1871–1911 [Ontario] [Excel]," Borealis, 2023. https://doi.org/10.5683/SP3/2YVN82*; Census of Canada,* 1921, vol. 5—Agriculture, 709; 1931, vol. 8—Agriculture, 454; 1941, vol. 8—Agriculture, 954.

Throughout the nineteenth century, the health of oxen and horses was vital to human labour power. The health of cattle, pigs, and chickens was essential for sustaining family farms in the early to mid-nineteenth century. Then, leading into the twentieth century, livestock became increasingly important on a larger scale, serving the economic interests of those who used these animals and their by-products for various needs, including food and clothing. Veterinary medicine focused on maintaining and protecting the value of livestock animals for human use and controlling zoonotic diseases for the protection of people (Table IV). There were certainly humanitarian factors that shaped the history of veterinary medicine as well; however, OVC administration and the provincial government prioritized industrialization and food production to feed a burgeoning urban population.

Table IV: Economic demand for animal healthcare on farms in Ontario from 1901 to 1941



Source: Census of Canada, 1921, vol. 5—Agriculture, 47–49; 1931, vol. 8—Agriculture, iv, cxvi, cxvii, clxx, 387; 1941, vol. 8—Agriculture, 5, 12, 13, 106, 454.[61]

The veterinary profession sought to meet the demand for its services, and as livestock industries and herd sizes grew, veterinarians responded accordingly. Generally, according to Margaret Derry, farmers realized the profitability of livestock production in the mid-nineteenth century.[62] The growth of the cattle industry in the late nineteenth century was the result of two immigrant groups (often Scottish) in Ontario. Wealthy landowners, who often held government positions, sought to develop their land, owned expensive purebred animals, and kept larger herds,

[61] The Canadian Agricultural Census began recording values for livestock in 1901. Although there were decreases in livestock values from the 1920s and in 1930, substantial increases in livestock values occurred in 1901 and 1911. Live stock was valued at $543,807,168 in 1931, $836,413,401 in 1921, $631,103,420 in 1911, and $275,167,627 in 1901. In 1931, Ontario accounted for 31.8 percent of Canada's total value of livestock. Census of Canada. Canada. Seventh Census of Canada, 1931, vol. 8—Agriculture, Ottawa, Ont., 1936, iv, 387, cx viii. https://publications.gc.ca/collections/collection_2017/statcan/CS98-1931-8.pdf.

[62] Margaret Derry, *Ontario's Cattle Kingdom: Purebred Breeders and Their World, 1870–1920* (Toronto: University of Toronto Press, 2001), 15.

although they often hired outside farm labour. The second group, according to Derry, was full-time farmers who came to Canada as labourers or "small-scale farmers."[63]

The veterinary profession was born out of necessity and adapted accordingly. However, farmers resisted the profession's initial top-down approach. Andrew Smith, who graduated from the prominent Edinburgh Veterinary School, gave the first lectures on animal health in Upper Canada. Smith first applied for a position as a veterinary officer with the British Army, before the Board of Agriculture of Upper Canada and the University of Toronto appointed him to deliver free public lectures together with a winter course on agriculture at the University of Toronto.[64] The courses were implemented to address state officials', and sometimes farmers', concerns over protecting Canada's growing livestock population against the spread of disease. Courses grew in length and regularity in the following years, emulating the British model. By 1864, the Board and the Agriculture and Arts Association of Ontario (after 1868) awarded diplomas to students who completed two six-month courses over two years and final examinations.[65] Following the creation of Ontario as a province in 1867, Smith, renowned for his expertise in horse health and anatomy, delivered anatomical demonstrations in an "unheated shed behind the infirmary" during November to keep the specimens cool. Upon receiving their diploma, graduates qualified to include "VS" (veterinary surgeon) after their names to distinguish their services from farriers and other experiential practitioners.[66] However, during this period, experiential practitioners were not yet prohibited from using the title of veterinarian. Consequently, over the next seven decades, the profession advocated for increased regulation and stricter enforcement. During the late nineteenth and early twentieth centuries, professional veterinary associations and the provincial government

[63] Derry, *Ontario's Cattle Kingdom: Purebred Breeders and Their World, 1870–1920*, 18.
[64] A. M. Evans, "Smith, Andrew," *Dictionary of Canadian Biography*, vol. 13 (1994).
[65] Evans, "Smith, Andrew."
[66] Evans, "Smith, Andrew."

gradually incorporated new legislation to govern protocols for contagious diseases and the veterinary profession. However, divisions existed within the profession and government. Over time, several provincial and federal statutes have played significant roles in establishing authority and shaping the profession.

One significant piece of legislation was the *Act respecting Contagious Diseases affecting Animals* in 1869, enacted to regulate the quarantine, treatment, and disposal of animals infected with contagious disease, "or suspected of being so," to prevent the spread of disease.[67] It also dictated specific protocols for importing animals, destroying any infected "hay, straw, fodder, or other article" that accompanied the infected animal, and purifying any "yard, stable, outhouse, … waggons, carts, carriages, car or other vehicles, or any vessels" where infected animals were transported or contained.[68] This Act proved to be a major force in regulating the sale of infected animals at market and their transportation across borders. This legislation sought to protect people by preventing the spread of disease from animals, their by-products, and their environments to humans, regardless of the potential impact (and subsequent "disposal") that harbouring the disease had on the animals. To execute these policies, the federal government required personnel who could effectively inspect animals and enforce regulations.

In 1871, the Province of Ontario amended the *Agriculture and Arts Act* to regulate veterinary practices, which meant that only those who had received a certificate from an authorized veterinary college could use the title of veterinary surgeon.[69] By the end of that year, OVC had educated "about fifty graduates," though not everyone set up practice in Ontario.[70] Therefore, many of the 189

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[67] Government of Canada, *An Act respecting Contagious Diseases affecting Animals*, CAP. XXXVII, *Statutes of Canada*, June 22, 1869, 418–424.
[68] Government of Canada, *An Act respecting Contagious Diseases affecting Animals*, 418.
[69] Government of Ontario. *An Amendment to the Agriculture and Arts Acts*, CAP. XXIII, 1871, 70, reprinted in Barker and Evans, *Century* One, 413.
[70] Barker and Evans, *Century One*, 9.

"Farriers, Veterinary Surgeons" recorded in the 1871 census must have been self-styled as such based on their experiential knowledge and services offered.[71] For its part, the Ontario Veterinary Association urged the province to appoint someone to enforce the provisions of the Act, and to refrain from "employ[ing] "Quacks" or unqualified persons in any Veterinary capacity."[72] While the Act and amendments certainly helped to establish authority for the veterinary profession, the Council of the Agriculture and Arts Association remained reluctant to persecute experiential practitioners. As Barker and Evans concede, "it was one thing … [to] be gratified at [OVC's] success in producing more and more qualified young men to guard the health of Ontario's domestic animals. It was another matter entirely to take action against non-graduates, worthy citizens and skilful enough practitioners of the veterinary art as a number of them were."[73]

Promoters of professional veterinary medicine and institutional knowledge production referred to rudimentary experiential health practices as "quack" medicine.[74] Some scholars refer to quack practitioners as "artisans;"[75] others refer to "quacks" as those who practised medicine and healthcare that did not follow the standards of medicine at the time, or in this case, veterinary medicine.[76] As Jones and Koolmees contend, "not all empiricists can simply be dismissed as quacks" nor should all "professional veterinary healers that had already existed for centuries [before institutional training was available to them] … be disqualified as ignorant empiricists or dangerous

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[71] Statistics Canada. Census of Canada, 1870–71, vol. 2, Ottawa, Ont., 1873, 289. Available from Canadiana Online: https://www.canadiana.ca/view/oocihm.9_08057/300.
[72] Barker and Evans, *Century One*, 26.
[73] Barker and Evans, *Century One*, 26–27.
[74] Zachary Dorner's references Thomas Corbyn, an eighteenth-century "apothecary, chemist, or druggist depending on who asked," in London, England (who also sold products in Canada and Australia), who referred to some of the medicines he experimented with in his laboratory and sold as "quack medicines" in *Merchants of Medicine: The Commerce and Coercion of Health in Britain's Long Eighteenth Century* (Chicago: University of Chicago Press, 2020), 32 and 175. However, he recognizes that medicine recipes were "supposed to follow certain standards of quality and composition," but in reality, their preparation widely varied.
[75] Sabrina Minuzzi, "'Quick to say Quack.' Medicinal Secrets from the Household to the Apothecary's Shop in Eighteenth-century Venice," *Social History of Medicine* 32, no. 1 (2017): 1–33.
[76] For veterinary medicine, this is evident in Barker and Evans, *Century One*; Jones and Koolmees, *A Concise History of Veterinary Medicine*, 311.

quacks."[77] Throughout this dissertation, I use the term "quack" to refer to instances where professional veterinarians criticized experiential experts for their approach to livestock healthcare.

The 1879 *Ontario Veterinary Act* established the authority of the Veterinary Medical Association of Ontario as a governing body with the power to regulate the profession using "by-laws, rules, and regulations" administered by a registrar, treasurer, and "such clerks, officers and servants, as may be necessary."[78] Graduates of OVC, the American College of New York, New York Veterinary College of New York, Columbia Veterinary College of New York, Montréal Veterinary School, or "the recognized veterinary institutions of Europe" all paid a two-dollar registration fee to receive the corresponding benefits and responsibilities afforded to association members.[79] Those convicted of falsely proclaiming to hold a certificate from the association were fined between five and fifty dollars.[80] The Act established the Ontario Veterinary Register, which listed qualified professionals and de-listed anyone convicted of a felony.[81] It also mandated payment of four dollars per day plus travel expenses for veterinarians who provided professional evidence in court, which was a common practice.[82]

As J. B. Derbyshire argues, the *Animal Contagious Disease Acts* of 1879 and 1885 excluded horses transported within Canada. Therefore, the control of glanders, a zoonotic disease examined in Chapter Four, became a provincial responsibility despite the efforts of Smith, in Ontario, and his rival, McEachran, in Montréal, to compel the federal government to make this amendment.[83] The

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[77] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 86 and 167.
[78] Government of Ontario, *An Act to incorporate The Ontario Veterinary Association*, 1879, Chapter 80, 270–271, reprinted in Barker and Evans, *Century One*, 414–415.
[79] Government of Ontario, *An Act to incorporate The Ontario Veterinary Association*, 1879, 270 and Schedule A, Section 3, 273, reprinted in Barker and Evans, *Century One*, 414 and 417.
[80] Government of Ontario, *An Act to incorporate The Ontario Veterinary Association*, 1879, 271.
[81] Government of Ontario, *An Act to incorporate The Ontario Veterinary Association*, 1879, 272.
[82] Government of Ontario, *An Act to incorporate The Ontario Veterinary Association*, 1879, 272.
[83] Duncan McEachran was appointed Chief Veterinary Inspector for the federal Department of Agriculture in 1881. Though "overly optimistic," McEachran believed that including horses in this Act and mandating the use of mallein, a diagnostic agent to identify glanders, would exterminate the disease in the less than 500 horses affected for $50,000. Andrew Smith, *Report of Ontario Cattle Quarantine. In: Report of the Minister of Agriculture of the Dominion of Canada for 1883* (Ottawa: Department of Agriculture, 1884), 233; Duncan McEachran, *Annual Report of the Export and Import Cattle Trade.*

Canadian government only implemented specific protocols for regulating this fatal, zoonotic disease after 1897.[84] Until then, the Act only called for the inspection of horses at borders. However, further controls and educated personnel were necessary to implement regulatory inspections and protocols required to prevent the spread of disease between humans and animals and to develop effective public health measures.

By the late nineteenth century, Ontario farmers had begun investing in expanding their dairy production. However, historian Kendra Smith-Howard argues that milk underwent a transformation that required not only changes to the product itself, but also the farm infrastructure that supported its production. Many farmers were reluctant to adopt pasteurization because it was a costly process that required significant upfront investment. Smith-Howard contends that as mothers made the switch from breast to bottle feeding between 1890 and 1930, babies' susceptibility to potentially harmful bacteria became a top priority for consumers and public health officials.[85] This transformation combined with dairy experts' request to small farmers that they not focus on the products cows produced for the farm (e.g., manure, fertilizer, or calves) but on the products they could produce for human consumption.[86] Smith-Howard also argues that farmers operated in a grey area of production during this period, wherein local, self-sustaining agricultural systems were not directly in contrast to large-scale industry. Instead, farmers often operated in both systems of production.[87] The production of safe milk for consumers naturally became a responsibility of

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In: Report of the Minister of Agriculture for the Dominion of Canada for the Calendar year 1885 (Ottawa: Department of Agriculture, 1886), 163; Duncan McEachran, *Cattle Quarantine. In: Report of the Minister of Agriculture for the Dominion of Canada for the Calendar Year 1892* (Ottawa: Department of Agriculture, 1893), 24; Duncan McEachran, *Report on Pictou and Other Cattle Diseases. In: Report of the Minister of Agriculture for the Dominion of Canada for the Calendar Year 1893* (Ottawa: Department of Agriculture, 1894), 75; Derbyshire, "The Eradication of Glanders in Canada," 723.

[84] Derbyshire, "The Eradication of Glanders in Canada," 722–723; Anonymous, "History of Health of Animals Division, Department of Agriculture," 1790–1960, CA F456-73, XA1 MS A061, University of Guelph Archives & Special Collection, Guelph, Ontario.

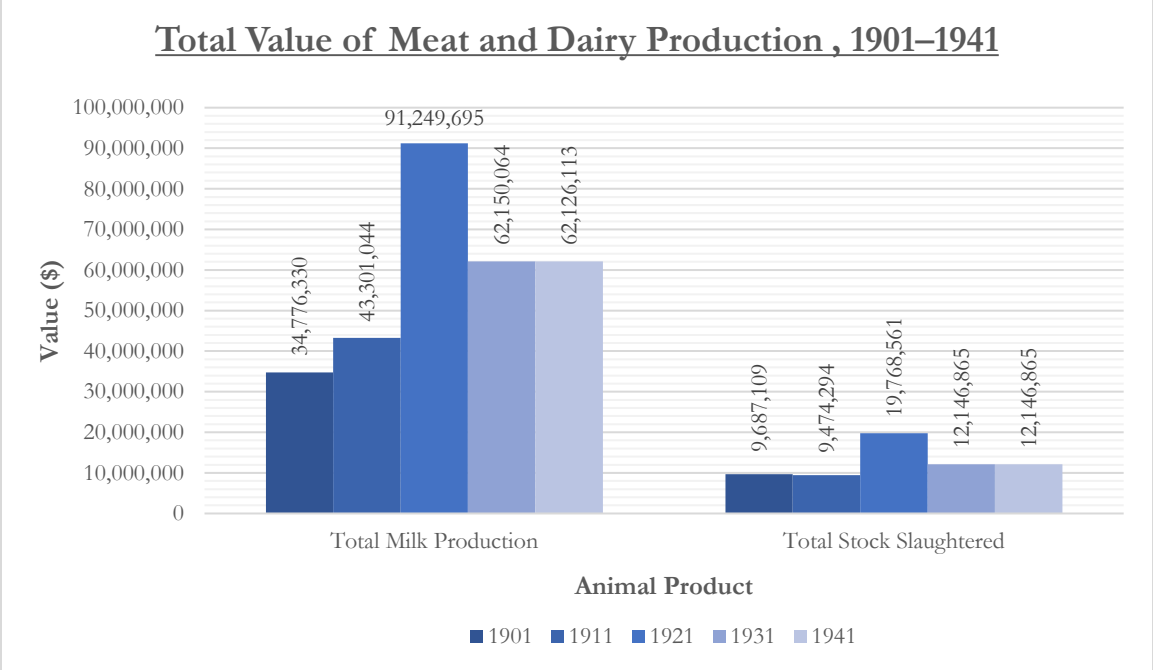
[85] Kendra Smith-Howard, *Pure and Modern Milk: An Environmental History since 1900* (Oxford: Oxford University Press, 2017), 12–35.

[86] Smith-Howard, *Pure and Modern Milk: An Environmental History since 1900*, 36–66.

[87] Smith-Howard, *Pure and Modern Milk: An Environmental History since 1900*, 36–66.

scientists and veterinarians. As the dairy and meat industries expanded in Ontario, the veterinary profession responded to public health officials' requests for healthier farming practices and livestock products (Table V). They developed a training curriculum for meat and dairy inspectors and initiated research projects aimed at addressing the demands of the provincial government and consumers for agricultural investment. These efforts were focused on ensuring sanitary external environments and healthy livestock bodies.

Table V: Expansion of the dairy and meat industries in Ontario from 1901 to 1941



Source: Department of Agriculture. "Census of Agriculture, 1871–1911 [Ontario] [Excel]," Borealis, 2023. https://doi.org/10.5683/SP3/2YVN82*; Census of Canada,* 1921, vol. 5—Agriculture, cv; 1931, vol. 8—Agriculture, 388; 1941, vol. 8—Agriculture, 5, 12, 13.[88]

A shift in thinking from external to internal environments during the transition to industrial farming enabled veterinarians and farmers to address the ecological conditions that fostered bacterial disease in overcrowded environments, such as industrial barns. By cleansing the internal ecosystem

[88] Ontario accounted for 40 percent of Canada's milk production in 1921. Statistics Canada, Sixth Census of Canada, 1921, vol. 5—Agriculture, Ottawa, Ont., 1929, cv.

of animal bodies, they could continue to be raised in unhealthy external ecosystems, which increased growth and feed conversion efficiency and had profound implications for food production in the second half of the twentieth century.[89] Eventually, following a slow, varied increase in livestock raised by each farmer, a reduction in their workload, and an inability to observe individual animal health that coincided with farmers' transition to modern agricultural systems, antibiotics became a cost-effective treatment, ideal for profit-driven industrial expansion that satisfied global concerns over population growth and the need to feed a burgeoning planet.[90]

At the turn of the twentieth century, Toronto city officials expressed concerns about milk safety and the need for inspections. In 1908, Toronto's medical health officer, Dr. Charles Hastings, estimated that over 25 percent of tuberculosis cases in children "could be attributed to contaminated milk."[91] By 1925, they were making public calls to the veterinary profession to act in safeguarding Toronto's milk supply (discussed in Chapter Five). Toronto consumers and public health officials, like those in Marion McKay's study of Winnipeg, emphasized the need to protect against "deliberate and accidental contamination" from the mid-1890s to 1922 (the same year that OVC moved from Guelph to Toronto).[92] McKay argues that in Winnipeg by the end of this period physicians and veterinarians made significant professional gains. Winnipeg's experience, according to McKay, also highlights the inequities involved in food production and consumption practices.

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[89] Nancy Langston, *Toxic Bodies: Hormone Disruptors and the Legacy of DES* (New Haven, CT: Yale University Press, 2011).
[90] Mark Finlay, "Hogs, Antibiotics and the Industrial Environments of Postwar Agriculture," in *Industrializing Organisms: Introducing Evolutionary History*, eds. Susan Schrepfer and Phillip Scranton (New York: Routledge, 2003), 237–260; Kendra Howard-Smith, "Antibiotics and Agricultural Change: Purifying Milk and Protecting Health in the Postwar Era," *Agricultural History* 84, no. 3 (Summer 2010): 327–351; Kendra Howard-Smith, "Healing Animals in an Antibiotic Age," *Technology and Culture* 58, no. 3 (July 2017): 722–748.
[91] Charles J. C. O. Hastings, "The National Importance of Pure Milk," Canadian Practitioner and Review (c. 1908). Canadian Institute for Historical Micro-reproductions no. 86969; in Marion McKay, ""The tubercular cow must go": Business, Politics, and Winnipeg's Milk Supply, 1894–1922," *Canadian Bulletin of Medical History* 23. no. 2 (2006): 358.
[92] McKay, ""The tubercular cow must go": Business, Politics, and Winnipeg's Milk Supply, 1894–1922," 355.

However, as Barbara Rosenkratz argues, public health physicians' and veterinarians' focus on bacteriology diverted attention away from the social causes of tuberculosis, such as poverty.[93] Nevertheless, at the end of the nineteenth century, it is clear that concerns over safe milk and fears of bovine tuberculosis encouraged public health officials to develop policies to combat its spread.

To do so, public health officials put pressure on veterinarians to develop and enforce parameters for combatting the spread of zoonotic diseases, including bovine tuberculosis. As early as the 1880s, Robert Koch, a scientist who examined cases of disease in cattle and humans, including bovine tuberculosis and anthrax (discussed in Chapter 4), faced criticism for his identification of differences between human and bovine tuberculosis and his insistence that "the threat of tuberculosis transmission through infected milk and meat [was] inconsequential."[94] Though he was later proven correct, Koch faced significant criticism from scientists. Koch contended that scientific principles had changed so much in the past ten to fifteen years that, when this level of debate occurred because evidence could point in different directions, scientists needed to reassess their past findings.[95] Through the turn of the twentieth century, the practice of scientific research was very contentious. However, early twentieth-century milk inspectors faced cases where "hidden disease was replaced by hidden motives," much like those addressed in Marion McKay's examination of Winnipeg public health officials' concerns over milk safety.[96] Nevertheless, veterinarians and physicians debated scientific principles and research conclusions, especially in cases of zoonotic

[93] Barbara Rosenkrantz, *Public Health and the State: Changing Views in Massachusetts 1842-1936* (Cambridge, Mass.: Harvard University Press, 1972), 170–79.
[94] Barbara Gutmann Rosenkrantz, "The Trouble with Bovine Tuberculosis," *Bulletin of the History of Medicine* 59, no. 2 (1985): 157.
[95] Rosenkrantz, "The Trouble with Bovine Tuberculosis," 158.
[96] Rosenkrantz, "The Trouble with Bovine Tuberculosis," 172; McKay, ""The tubercular cow must go": Business, Politics, and Winnipeg's Milk Supply, 1894–1922," 355–380.

disease, which led to an irregular, inconsistent advancement of veterinary science and competition for authority over public health regulations in the early twentieth century.[97]

In 1895 and 1896, the provincial government made further amendments to the *Veterinary College Act*, which reinforced the professional authority of veterinarians after the dissolution of the Agriculture and Arts Association. These amendments granted the OVC the authority to issue diplomas. This Act established and regulated relationships between OVC, the University of Toronto, and the province.[98] These revisions enhanced the legitimacy of the veterinary profession and aligned it more closely with the institutional education provided at the Agricultural College in Guelph. This was achieved by establishing a connection between OVC, the University of Toronto, and Ontario's Ministry of Agriculture.

Still, by 1905, resistance existed outside the "brotherhood" of the profession, and so we see James S. Duff, Minister of Agriculture, commending OVC in his 1911 opening address on its efforts to legitimize the profession: "[O]ur entire people now recognize the importance of the development of veterinary science, because as the time goes on people [and farmers] find that it is very much to their advantage."[99] By 1916, the Minister was claiming that "quack" veterinarians no longer existed

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[97] Jane Jenkins, "The Udder Side of Maritime Rights: Bovine Tuberculosis and Federal Regulatory Power in 1920s Prince Edward Island," *Acadiensis* XL, no. 2 (Summer/ Autumn 2011): 70–93.

[98] Government of Ontario, *An Act Respecting Veterinary Surgeons,* 1895, Chapter 30; Government of Ontario, *An Act Respecting Veterinary Surgeons,* 1896, Chapter 15, reprinted in Barker and Evans, *Century One*, 420–421 and 422.

[99] E. A. A. Grange, "Report of the Ontario Veterinary College, 1911," Toronto: The Ontario Department of Agriculture, 1912, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 7 and 15; Government of Ontario, *An Act Respecting Veterinary Surgeons*, 1911; Grange, "Report of the Ontario Veterinary College, 1911," 13. At this time, William Weld, editor for *The Farmer's Advocate*, answered a reader's inquiries about the costs of practising veterinary medicine in Ontario. Weld responded that new instruments would cost "about $300" or "much more" if they like, and for three six-month sessions at OVC he stated "tuition fees [were] $75 per session; board, $4 and upwards per week; books, say $100; subjects and dissecting rooms fees, say $100, and other expenses according to circumstances. A careful student may graduate at a total expense of, say $1,500." At this point, Weld noted, an average veterinarian would make an income of $1,500. He noted the sale of good practices could only be "acquired through merit and attention," though often for a "fair price" if they had secured the veterinarian's "good will." "Questions and Answers—Re Veterinarians," *The Farmer's Advocate and Home Magazine* XLVI, no. 44 (March 23, 1911): 529; Grange, "Report of the Ontario Veterinary College, 1911," 13.

in Ontario—which was not the case as farmers continued to value less expensive, swiftly accessible experiential practices.

Following the First World War, anthropocentric values had shifted from viewing horses, oxen, and mules primarily as labour to prioritizing industrial livestock production. There was also a growing interest, albeit to a lesser extent, in small companion animals, animals involved in human leisure activities, such as racehorses, and those used for spectacle, such as elephants.[100] This shift affected economic demand for veterinary services. While farmers were willing to invest in veterinary care for livestock that had monetary value, owners of animals for companionship or entertainment also began to rely on veterinary care. However, the veterinary profession was influenced by its leadership's perspective on the gender and class dynamics of the time; its primary aim was to fulfill state demands to maintain livestock health, which was essential to agricultural nation-building projects.

The *Veterinary Science Practice Act* of 1920, with its condemnation of experiential practitioners, proved to be the turning point. Experiential practitioners were allowed to continue their work under the new law if they had been practising for five years or more. However, by 1931, following eight amendments and five new clauses, experiential practices had met the end of the road.[101] Experiential practitioners no longer received financial compensation for their services or any recognition under

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[100] F. Eugene Gattinger, *A Century of Challenge: A History of the Ontario Veterinary College* (Toronto: University of Toronto Press, 1962), 82–83. For more studies about this transitional period in the animal–human relationship, see Susan Nance, *Entertaining Elephants* (Baltimore: The Johns Hopkins University Press, 2013) for histories of circus elephants; and *Rodeo: An Animal History* (Norman: University of Oklahoma Press, 2020) for a history of rodeo horses in North America. See Gwyneth Anne Thayer, *Going to the Dogs: Greyhound Racing, Animal Activism, and American Popular Culture* (Lawrence, Kansas: University Press of Kansas, 2013), for a history of twentieth-century greyhound racing. See Nigel Rothfels, *Savages and Beasts: The Birth of the Modern Zoo*, for more on the birth of zoos and animals in captivity, as well as his work *Elephant Trails: A History of Animals and Cultures* (Baltimore: The Johns Hopkins University Press, 2021) for a history of elephant–human interactions. Also see Sandra Swart, *The Lion's Historian – Africa's Animal Past* (Johannesburg: Jacana Press, 2023) for a history of human's shared past with African animals and *Riding High – horses, humans and history in South Africa* (Johannesburg: Witwatersrand University Press, 2010), which explores the role of the horse in the colonial economies of South Africa.

[101] An increase in enrolment from the United States and Western Canada may play a role in this change in distribution. Lisa Cox, Curator, Barker Veterinary Museum, Ontario Veterinary College, University of Guelph, Ontario; Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1931; Barker and Evans, *Century* One, 133.

the new law. At the same time, access to laboratory support became available, and faculty at OVC were producing vaccines as well as offering a range of other animal healthcare services to farmers.

Despite the demand for their services, however, it took a while for veterinarians to increase in number in rural Ontario. For most of this period, veterinarians remained in cities and were relatively inaccessible in the countryside, as shown in Chapter Two. The concentration of veterinarians was in Toronto. The number of veterinarians in Ontario remained relatively steady after a rise in the 1891 census, unlike Canada's overall increase in veterinarians (Figure I).[102] Factors limiting the profession's growth in the early twentieth century included an increase in curriculum standards and the length of OVC's program, with both factors contributing to higher enrolment numbers but fewer graduates. However, this did not stop some from practising as experiential practitioners.

In the early twentieth century and interwar period, the animal welfare movement emerged in Britain, gaining traction among upper-class women who valued their relationships with small companion animals and were concerned about the health of stray animals in urban centres. This group, Darcy Ingram argues, combined their "shared experience of marginalization" with animals and their association with "ethics of care" by gendered understandings of labour and nurture,

[102] Statistics Canada. Census of Canada, 1870–71, vol. 2, Ottawa, Ont., 1873, 289. Available from Canadiana Online: https://www.canadiana.ca/view/oocihm.9_08057/300; Statistics Canada. Census of Canada, 1880–81, vol. 2, Ottawa, Ont., 1884, 308. Available from Canadiana Online: https://www.canadiana.ca/view/oocihm.9_08062/320; Statistics Canada. Census of Canada, 1890–91, vol. 2, Ottawa, Ont., 1893, 167 and 190. Available from Statistics Canada Online: https://publications.gc.ca/collections/collection_2016/statcan/CS98-1891-2.pdf. The 1901 census did not list professional occupations, specifically "Veterinary Surgeon." Eight hundred fifty-four veterinarians in Canada in 1901 were recorded in the 1911 Census, as reported by Statistics Canada. Fifth Census of Canada, 1911, vol. 6, Ottawa, Ont., 1915, 8. Available from Statistics Canada Online: https://publications.gc.ca/collections/collection_2016/statcan/CS98-1911-6.pdf; Statistics Canada. Sixth Census of Canada, 1921, vol. 4—Occupations, Ottawa, Ont., 1929, 178–179, and 9. Available from Internet Archive Online: https://dn790000.ca.archive.org/0/items/1921981921FV41929engfra/1921981921FV41929engfra.pdf; Statistics Canada. Seventh Census of Canada, 1931, vol. 7—Occupations and Industries, Ottawa, Ont., 1936, 132, 72, and 876. Available from Internet Archive Online: https://dn790007.ca.archive.org/0/items/1931981931FV71936engfra/1931981931FV71936engfra.pdf.

something that is explored further in Chapter Five.[103] Similarly, the institutional marginalization evident in OVC leadership's approach to enrolment (restricting women's entrance) and small animal medicine (prioritizing the livestock industry) is also apparent in Ingram's study. Ingram contends that the animal welfare movement in Canada would have been much more radical if women's participation had not been suppressed.[104]

A move to rural Guelph from Toronto in 1922—with less robust facilities initially and few motivated to leave the city (not everyone was on board with this move)—and the introduction of stricter regulatory laws in 1920 also restricted the profession's growth.[105] As the profession in Ontario laid the groundwork for future growth, these growing pains left a vacuum of agricultural livestock health knowledge in its wake. During the interwar period, OVC made efforts to fill this void by establishing extension services and forming connections with farmers as agriculture underwent a period of industrialization.

OVC established extension services to demonstrate the efficacy of veterinary science and address animal health challenges facing the livestock industry. As Peter Russell contends, in 1924, Prairie farmers resisted livestock farming because it combined "environmental unpredictability with economic uncertainty" and significant investments. Instead, some farmers rejected agricultural scientists' recommendations for long-term farm management in favour of "short- term market opportunities."[106] Initially, experiential experts, informal animal health practitioners, and patent medicine producers participated in an agricultural marketplace, selling experiential, and sometimes scientific knowledge, and medicinal products to meet farmers' demand for cost-effective land use

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[103] Darcy Ingram, "Wild Things: Taming Canada's Animal Welfare Movement," in *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, eds. Christabelle Sethna, Joanna Dean, and Darcy Ingram (Calgary: University of Calgary Press, 2017), 108.
[104] Ingram, "Wild Things: Taming Canada's Animal Welfare Movement," 87–114.
[105] Lisa Cox shared enrolment and graduate numbers from OVC from 1871 to 1939, which correlate with the growth of the profession.
[106] Russell, *How Agriculture Made Canada,* 270.

options that would sustain high profits. An agricultural marketplace for valuable, cost-effective treatments competed with costly veterinary visits, both due to time and proximity, at the time. However, this competition primarily targeted consumers who wanted their services, which was not necessarily the case in Ontario.

The mobilization of knowledge was as central to this research as the impending regulation of the profession. Knowledge took many forms. From 1862 to 1939, farmers mainly relied on their own experiential knowledge or that of an experienced neighbour. In *Being Neighbours*, Catharine Wilson defines farmers' specialized knowledge as "participatory," "common-sense," or "vernacular," and this knowledge—tried-and-true statements—appeared in diary records, agricultural periodicals, newspapers, and popular animal health manuals. It was also shared through colloquial local practices.[107] Farmers with increased knowledge of animal health, like Wilson's bee networks, developed "reputations, trust, shared values, and a changing participatory knowledge and consciousness."[108] They "employed a 'common-sense' knowledge constructed and constrained by daily experience" that evolved.[109]

Experiential experts and practitioners were members of a network of social exchange. Within networks of farm neighbours, each neighbour participated in a "voluntary yet binding social contract."[110] Experiential practitioners contributed their specialized knowledge of animal health to these reciprocal exchanges. The flow of knowledge and the physical act of administering livestock healthcare treatments or supplying medicines equipped neighbours with specialized knowledge they

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[107] Wilson, *Being Neighbours*, 9, 10, 251. They investigated outbreaks of disease through post-mortem examinations, developed knowledge of animal anatomy as they butchered livestock for sustenance, experimented with treatments, and shaped environments. For example, some farmers identified and prevented the spread of poisonous weeds, built fences for pastures, maintained healthy stable environments, and recommended ways to prevent, treat, and cure animal health issues.

[108] Wilson, *Being Neighbours*, 8.

[109] Wilson, *Being Neighbours*, 10.

[110] Wilson, *Being Neighbours*, 24. Social exchange theorists argue that these networks of exchange held an "expectation of reciprocity." Wilson, *Being Neighbours*, 24.

could contribute to rural networks of exchange. As Wilson argues, the relationships that made up these networks provide insight into "both the agency of actors and the influence of relationships within the network."[111] Networks of relationships were also determined by proximity and availability. Before veterinarians were readily available, farmers relied on close neighbours with experiential knowledge of animal health to supply advice or help with treatments in cases of livestock health emergencies.

Experiential and empirical knowledge are evident in popular publications, where editors reflect on how others had solved a particular livestock health challenge. Alexander Bowman equates empirical knowledge with knowledge exchanges and "reveals how this knowledge was developed through experience and informed by observation, local environments, peer learning, and lessons passed down."[112] Experiential and empirical knowledge both refer to the way farmers gain knowledge—through their own experiences, those of their experienced neighbour, or detailed written accounts of these practices found in manuals produced by experiential experts. Throughout the following chapters, empirical knowledge refers to the publication of collective data from experiential practitioners. With the growing and widespread publication of new techniques and practices, mobilizers of experiential health data in popular animal health manuals published new empirical data as farmers reflected on the effectiveness of "tried and true" methods.

With the sporadic, yet overall progression of the professionalization of veterinary medicine came increased knowledge of veterinary science, referred to as institutional knowledge. Agricultural experts based their advice on knowledge "created beyond the lived farm experience." It was founded, as Catharine Wilson argues, on the "project of liberal rule, whereby they envisioned a concept of community that embraced the liberal ideals of self-possession, improvement, and

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[111] Wilson, *Being Neighbours*, 24.
[112] Alexander Bowman, "Dipping, Dosing, Drenching: Managing Unhealthy Beasts on British Farms," (PhD diss., King's College London, 2019), 2 and 13.

efficiency, one made up of self-reliant farms run on business models and aimed at feeding an increasingly urban nation."[113] Veterinarians, like other agricultural scientists at the time, used reductive, objective processes that upheld scientific authority and denigrated lived rural experiences. As Wilson argues, "an army of experts, agronomists, social scientists, and rural sociologists joined in and rushed to dissect rural life, improve it, and carve out a niche for their work, thereby elevating their professional status."[114]

For their part, professional veterinary experts believed farmers needed their "leadership" to "reach a level of civilization akin to that in the city."[115] They expected farmers to adopt practices that would increase agricultural production to "feed urban and foreign markets and increase farm income." Veterinarians encouraged "biological innovation" and means for greater production. Initially, some farmers were reluctant to accept this top-down imposition of professional veterinary experts' institutional knowledge.[116]

In essence, the efforts of all three factions (experiential, empirical, and professional) to mobilize knowledge coalesced and came into conflict in a non-linear pattern that reflected the growth and acceptance of veterinary science. The rate of acceptance and cooperation was dependent on hinterland-metropolis relationships. Access to veterinary science was slower for those located farther from urban veterinary knowledge centres, many of whom relied on the close proximity of neighbours to share experiential livestock health knowledge.[117]

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113 Wilson, *Being Neighbours*, 251.
114 Wilson, *Being Neighbours*, 249–250.
115 Wilson, *Being Neighbours*, 249–250.
116 Wilson, *Being Neighbours*, 251.
117 William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton, 1991).

Sources

Choosing to situate this research in rural southern Ontario was essential to understanding the development of veterinary science and its application on farms. I examined regions with access to knowledge from the first veterinary institution in Canada, the Ontario Veterinary College (OVC), initially located at the University of Toronto before its move to Guelph, Ontario. This region lends itself to understanding farmers' trust or distrust of institutional knowledge, and later, experiential knowledge. Although many farmers could reach these institutions by horseback or through the services of a few veterinarians who travelled the countryside, initially many relied on neighbours or community members known for their experiential expertise when livestock health issues arose.

First and foremost, the University of Guelph's McLaughlin Special Collections, which houses agricultural and OVC's collections, was key to this dissertation. These collections house lecture notes, exam questions, research notes, correspondence from past alumni and emeriti, and OVC's annual reports to the Minister of Agriculture that provided substantial evidence of professional veterinarians' motivations and work. C. A. V. Barker, alumnus and emeritus of OVC, also founded a valuable collection for the Ontario Veterinary Association, the OVC, and the Canadian Veterinary Medical Association, which contains his research notes as well as professional biographies, institutional information, and OVC graduates' role in the First World War. Barker also founded the Barker Veterinary Museum at OVC, whose curator, Lisa Cox, continues to provide a wealth of historical knowledge on the rise of veterinary medicine in Canada.

Rural county archives located in Simcoe County, Grey County, and Dufferin County (all north of OVC) indulged my interests by locating histories of livestock health on their back shelves. These collections housed popular animal health manuals that were purchased by subscription and other animal health pamphlets that some may have received alongside their purchase of medicinal products. The University of Guelph's Rural Diary Archive consists of a valuable online collection of

diaries. In collaboration with Trent University Archives, the digitization of William Standen's diary was particularly important to this project, providing insight into how farmers relied on and sought to treat work and livestock animals every day in rural Ontario.

Library and Archives Canada (LAC) holds a large collection from Canada's Experimental Farms and valuable correspondence and public health memos on policy measures and the legalities of maintaining livestock health and limiting the spread of zoonotic diseases. LAC's collaboration with Canadiana Online has also proven to be immensely beneficial. Its digitized collections of *The Canada Farmer*, *The Canada Gazette*, and *The Farmer's Advocate*, a prominent and popular agricultural periodical published in London, Ontario, impart letters to the editor, articles from global publications written by British, American, and Canadian veterinarians, and eventually also a column focused on veterinary medicine, which helped me to conceptualize the evolution of experiential livestock health knowledge.

This project also draws upon newspaper collections, such as *The Globe* and *The London Free Press*, further editions of popular manuals found in rural county archives housed on the Internet Archive, and the Museum of Healthcare at Kingston's collection of artefacts related to popular wonder medicines. These sources broadened the scope and historical context of popular and professional veterinary activities.

A deep reading of this primary source material provides valuable insight into how farmers, experiential practitioners, and professional veterinarians practised animal healthcare. While the primary source evidence presented in this dissertation does not encompass the experiences of all farmers, informal practitioners, or professional veterinarians, it does shed light on who was involved in animal healthcare and how it was practised on farms during this period. Cross-referencing and layering this evidence give a fuller picture that reveals new insights into the histories of professional veterinary medicine, science, rural life, and animals.

Chapter Organization

In the following chapters, I trace the professionalization of veterinary medicine in southern Ontario from the early foundations of OVC in 1862 to the onset of the Second World War. The first and second chapters focus on the reluctant coexistence between experiential practitioners and professional, institutionally trained veterinarians. Over time, the profession gained recognition from state officials, agricultural industrialists, and farmers for its experience in applying recent developments in veterinary science. In Chapter 1, I use a combination of rural diaries, agricultural periodicals, and popular subscription-based manuals to identify different foundations of knowledge production and mobilization. In examining these sources, I analyze the information circulated to advance knowledge of livestock healthcare and veterinary science, with a focus on treating common health issues faced by farmers and the animals in their care. I analyze vernacular veterinary sources that conveyed experiential knowledge in rural environments from 1862, when institutional animal health lectures began in Ontario, up until the period before the First World War, when veterinarians took on an essential role in maintaining the health of animals, particularly livestock, at a time when farmers heavily relied on them. Despite the establishment of animal health lectures at the University of Toronto in 1862, veterinary science did not immediately infiltrate farmers' livestock health practices in rural Ontario.

The second chapter builds on the nature of experiential and empirical knowledge in early veterinary medicine. It examines how veterinary medicine was taught in institutions, efforts to attract more veterinary students, and how the field evolved to accumulate authority for the profession. This period of professionalization saw the establishment of the Ontario Veterinary Medical Association in 1874 and the rise of veterinary schools and accumulation of institutional knowledge. During this period, competition from correspondence schools posed a challenge to the veterinary profession's authority. Using evidence from institutional lecture notes and popular animal health manuals

distributed by the London Veterinary Correspondence School, the first section deals with professional veterinarians' distrust of so-called "book farmers" and their condemnation of veterinary correspondence schools. In contrast, the second portion draws on evidence from OVC's annual reports to the Minister of Agriculture to address curriculum development at OVC. This development included a growing emphasis on practical fieldwork in response to concerns about relying solely on "book learning."

The third and fourth chapters are thematic, focusing on collaborative efforts to eradicate fatal zoonotic diseases and conflicts over prescribing medications for treatment. In the third chapter, I focus on conflicts over knowledge production and mobilization using evidence from advertisements for popular medicines, their availability in rural general stores, and evolving lecture notes for institutional lectures on Materia Medica. I examine the use of what veterinarians condemn as "quack medicine" and the blurred boundaries between experiential knowledge, institutional medicine, and the promotion of accessible medicines in rural environments. Some farmers relied on early natural medicines available in general stores to treat not only humans, but also animals. In the early twentieth century, some professionally trained veterinarians embarked on efforts to promote and make pre-mixed medicines, which were made available in rural communities during the interwar period. By looking at the differences between experiential and institutional knowledge of medicine in treating common livestock health ailments, I demonstrate that the boundary between them was not as clear-cut as it may seem; indeed, their availability was neither immediate nor linear. The fourth chapter covers a similar time frame. However, it explores the threat of zoonotic disease and the implementation of cooperative public health initiatives that saw veterinarians function as an extension of state efforts to control the spread of disease through the turn of the twentieth century. Newspapers, agricultural publications, and scientific reports demonstrate how First World War efforts facilitated increased cooperation and helped unify efforts to combat disease.

The final chapter addresses how veterinary medicine gained authority and accelerated its growth in response to Canada's economic growth and the industrialization of livestock farming. Finally, I will show how, following the First World War, the development of veterinary authority in response to the Canadian Army Veterinary Corps' success in monitoring animal health and education campaigns helped unify efforts to combat disease. This led the veterinary profession to invest in opportunities to connect with farmers. Evidence from annual reports to the Minister of Agriculture, combined with farmer and consumer demands and motivations, demonstrates how veterinary medicine became more accessible in rural communities. This shift to experimental science bridged divides and bolstered the status of veterinarians. As I conclude this chapter, I show how the accessibility and increase in experimental science, investigative work, and extension services coincided with an increase in industrial farming, farm sizes, and the growing number of livestock on individual farms. In making these changes, the veterinary profession advanced into the early foundations of what it looks like today, meeting farmers' demands for treating herds rather than individual animals and maintaining the health of livestock that a growing Canadian population relied upon. In the final chapter, I discuss shortcomings of the veterinary profession that remained at the end of this period, despite the veterinary profession's efforts to develop in response to state officials, agricultural industrialists, and farmers' demand for their veterinary services.

Chapter 1: Rival Authorities: Coalescence and Competition Between Popular Experiential Educators and Professional Veterinary Knowledge Producers

The weather, the health of his livestock, a pregnant horse—these and more were documented daily by William Standen. A farmer occupying land in Minesing, near Barrie, Ontario, he used the daily records he kept from 1879 to 1888 to help him treat injuries and diagnose outbreaks of disease. Standen's diary entries also served as a vehicle for jotting down his thoughts on how he might limit exposure to disease by cleaning stalls and isolating contagious sheep from those that were preparing to lamb; the different complications horses experienced while giving birth or labouring in fields in the lead-up to and following birth; or the reasons for a colt or foal dying during or shortly after its birth.[1] He recorded the many times he consulted various neighbours for their expertise: one neighbour for help diagnosing and administering treatments; another neighbour with more extensive animal health knowledge for medicines and complex treatment methods. As time went on, Standen began to explore ways to expand his knowledge, for example by accessing a popular animal health manual.[2] Standen's evolution in acquiring knowledge—so well documented in his diary entries—highlights the challenges that farmers faced in accessing scientific animal health knowledge and veterinary care for their livestock before local veterinary services were available in rural communities.

The latter half of the nineteenth and early twentieth centuries—marked by the development and popularization of science—was a period of significant change, one that had a profound influence on everyday life.[3] Yet, many farmers continued to depend on information spread through

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[1] Standen regularly recorded environmental conditions, including the weather and seasonal changes that influenced his approach to livestock health.

[2] Minesing, Ontario, is located over 100 kilometres north and slightly west of Toronto, Ontario, home to the Upper Canada Veterinary College and, later, Ontario Veterinary College (OVC), and over 120 kilometres north-north-east of Guelph, Ontario, where OVC moved in 1920.
William Standen Diary, 1879–1895, 87-006, William Standen Fonds, Trent University Archives, Peterborough, Ontario.

[3] During the late nineteenth century, scientific knowledge slowly gained traction in Britain. Scientific fields in Ontario shared a similar structure. The rising number of academic science societies, popular publications for adults and children,

word of mouth. Although emerging veterinary professionals were beginning to dispute domestic animal health knowledge and informal expert practitioners' ability to practise in Ontario, farmers continued to acquire experiential knowledge of livestock health from local practices, and also began to access scientific knowledge in agricultural periodicals, popular animal health manuals, and distance education courses through vast global networks of knowledge exchange. Initially, experiential and professional practitioners existed together, both addressing demands for greater knowledge of animal health. After all, access to veterinary services was often limited due to distance and available resources. However, by the early part of the twentieth century, veterinary professionals sought to eliminate informal and popular sources of domestic animal health knowledge, especially popular animal health and distance education manuals, in an effort to establish their professional and scientific authority.

With the growth in scientific authority came farmers' increasing acceptance of scientific knowledge and veterinary services. Andrew Smith, a veterinary surgeon educated at the Edinburgh Veterinary College and a member of the Highland and Agricultural Society of Scotland, delivered the first veterinary science lectures in Canada. He was recruited by Adam Ferguson, of the Board of Agriculture of Upper Canada, and George Buckland, professor of agriculture at the University of Toronto, to deliver free, public veterinary lectures as part of the board's winter agricultural course in Toronto.[4] Though these public veterinary science lectures were first delivered in 1862, two years before the founding of the Upper Canada Veterinary School (renamed the Ontario Veterinary

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medical and dental professions, and associational memberships all helped to mobilize knowledge and popularize science in Victorian Britain. See Bernard Lightman, *Victorian Science in Context* (Chicago and London: University of Chicago Press, 1997). In Ontario, most veterinary professors were educated in Scotland at Dick University (or within this network) or England. At the same time, the cattle-breeding profession, according to Margaret Derry, consisted of immigrant farmers, typically of Scottish descent, from two groups: wealthy landowners who bred purebreds and full-time farm labourers, who brought with them British agricultural knowledge and customs. Margaret Derry, *Ontario's Cattle Kingdom: Purebred Breeders and Their World, 1870–1920* (Toronto: University of Toronto Press, 2001), 2–3.

[4] A. M. Evans, "SMITH, ANDREW," *Dictionary of Canadian Biography*, vol. 13, University of Toronto/Université Laval, 1994. https://www.biographi.ca/en/bio/smith_andrew_13E.html.

College (OVC) in 1870), rural communities had difficulty accessing veterinary services. In the early years of veterinary medicine in Canada, few veterinary practitioners were institutionally trained, and of those who were graduates of the University of Toronto's veterinary program, few set up practices in rural communities.[5] This was mainly because professionally trained veterinarians often lived in urban areas close to veterinary institutions and urban horse populations.[6] The market for veterinary services had the greatest potential in cities because of the large number of horses needed for transporting humans and freight. Urban horse populations grew dramatically between 1850 and 1880. Though a declining population of horses began in the late-nineteenth century, horses were resilient, "persisting for more than a century after [their] supposed displacement."[7] Canada's vast networks of trade and transportation required the distribution of livestock healthcare knowledge over long distances to reduce the spread of disease and address common challenges. While professional veterinarians sought to establish their authority, they often disapproved of popular knowledge producers and experiential practitioners. In rural communities where veterinary care was limited, farmers in southern Ontario had some access to both experiential experts and professional veterinarians. However, their access varied based on the affordability of veterinary services and the availability of popular agricultural publications.

By the mid- to late nineteenth century, access to knowledge allowed people in Ontario's rural communities to adjust livestock healthcare practices and agricultural industries.[8] Popular publications

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[5] Low student enrolment from farm communities and the decision of those enrolled to remain in urban centres following graduation is explored in Chapter Two.

[6] See Clay McShane and Joel Tarr, *The Horse in the City: Living Machines in the Nineteenth Century* (Baltimore: Johns Hopkins University Press, 2007), 15–16; Ann Norton Greene, *Horses at Work: Harnessing Power in Industrial America* (Boston: Harvard University Press, 2008); Frederick L. Brown, *The City Is More Than Human: An Animal History of Seattle* (Seattle and London: University of Washington Press, 2016); Sean Kheraj, "Urban Environments and the Animal Nuisance: Domestic Livestock Regulation in Nineteenth-Century Canadian Cities," *Urban History Review* 44, no. 1–2 (Fall 2015/Spring 2016): 37–55; Margaret Derry, *Horses in Society: A Story of Animal Breeding and Marketing Culture, 1800-1920* (Toronto: University of Toronto Press, 2015).

[7] Clay McShane and Joel Tarr, "The Decline of the Urban Horse in American Cities," *The Journal of Transport History* 24, no. 2 (2003): 177–198.

[8] Alexander Bowman argues that farmers' empirical knowledge had roots in anthropological and ethnographic research. Bowman equates empirical knowledge with knowledge exchanges and "reveals how this knowledge was developed

compiled global accounts of experiential knowledge into empirical evidence that helped farmers adopt new ways of treating common livestock health challenges. While some professional veterinarians delivered lectures to rural-based agricultural associations, other experts spread information in popular periodicals and manuals to reach rural communities.[9] Before advancements in transportation, rural mail delivery of circulars and subscriptions to published sources reduced the time it took for animal health knowledge to reach rural areas, which provided access to more extensive networks of experiential animal health knowledge. Many professional veterinarians condemned acquiring knowledge from these popular sources. They called this knowledge "quack science" and argued it was "absurd" for people to believe that popular sources could "turn 'all and sundry' into competent practitioners."[10] Though many likely had economic motivations, popular editors also responded to readers' concerns with material informed by advancements in veterinary science and a wider range of experiential knowledge.

In practice, most livestock healthcare took place outside veterinary institutions. Even so, historians have largely depended on professional or institutional veterinary sources to write animal health histories. The desire to learn about animal health and develop treatments was not new at the end of the nineteenth century. Historians Abigail Woods and Michael Bresalier argue that the desire to learn comparative anatomy and understand human and animal health predates the establishment of the London Veterinary College in 1791. Early medical doctors specializing in human care studied comparative anatomy and conducted experiments and surgical procedures on live animals. They

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through experience and informed by observation, local environments, peer learning, and lessons passed down." Alexander Bowman, "Dipping, Dosing, Drenching: Managing Unhealthy Beasts on British Farms," (PhD diss., King's College London, 2019), 2 and 13.

[9] According to Sandwell, after 1871, when other industrializing countries' rural populations did not increase, Canada's rural population grew, and Canada remained a rural country until the Second World War. Ruth Sandwell, *Canada's Rural Majority: Households, Environments, and Economies, 1870–1940* (Toronto: University of Toronto Press, 2016).

[10] "Veterinarians in Ontario," *The Farmer's Advocate and Home Magazine* LIII, no. 1324 (June 13, 1918): 1342; C. A. V. Barker and Margaret Evans, *Century One: A History of the Ontario Veterinary Association, 1874–1974* (Guelph: Distributed by the authors, 1976), 112. Footnote 31.

produced literature on equine health in journals such as *The Lancet*, offered lectures on animal anatomy and established infirmaries for treating horses and training those working with horses.[11] Yet, many scholars view the establishment of veterinary colleges as a distinct break "in which a newly enlightened approach to animal healing superseded the ignorance and cruelty of earlier generations."[12] However, it is clear that many medical doctors expressed an interest in veterinary education by attending specialized lectures, conducting veterinary surgeries, and practising animal health care for their own purposes. Some even used their accumulated veterinary knowledge to understand human medicine better. These early foundations of the One Medicine and later One Health movements that developed in the inter-war period and the 1980s, respectively, are evidence of human's understanding of the connection between human and animal medicine throughout this period.[13] In later chapters, I argue that environments and environmental health also became a concern of health practitioners. This chapter focuses on histories of animal health that predate the professionalization and established authority of veterinary medicine, similar to how animal health practices predated the arrival of veterinarians in the countryside.

For decades, popular manuals satisfied a rural demand for alternatives to institutional training. By using visual depictions and sensory input to interpret animal suffering, experiential experts offered basic translations of veterinary science at a time when veterinarians were not easily accessible in rural environments. While these popular animal health manuals offered guidance, assessing the effectiveness of the advice contained therein for diagnosing and remedying ailments is challenging without considering other social and cultural sources. Additionally, many records often

[11] Simon D. J. Chaplin, "John Hunter and the 'Museum Oeconomy' 1750–1800," (PhD thesis, King's College London), 2009. http://wellcomelibrary.org/content/documents/john-hunter-and-the-museum-oeconomy; Lise Wilkinson, *Animals and Disease: An Introduction to the History of Comparative Medicine* (Cambridge: Cambridge University Press, 1992); W. Youatt, "Lectures on Veterinary Medicine Delivered in the University of London," *The Lancet* 17 (1831): 333–337.
[12] Abigail Woods and Michael Bresalier, "One Health, Many Histories," *Veterinary Record* 174, no. 26 (2014): 650.
[13] Woods and Bresalier, "One Health, Many Histories," 652–653.

lack the detail necessary to evaluate treatment effectiveness. Nevertheless, the widespread popularity of these manuals indicates that they helped fulfill a rural demand for knowledge of veterinary science, a facet that many animal histories have overlooked.[14]

Current histories of veterinary medicine often lean heavily on professional and institutional documents. They overlook the value of combining popular animal health manuals with newspapers, agricultural periodicals, advertising pamphlets, and farmer's own experiences documented in diaries. This study attempts to correct this gap by shedding light on the knowledge farmers accessed to help them confront common animal health challenges. Historical studies have neglected to focus on the realities of animal health in favour of the human perspective and "celebratory narratives of scientific progress."[15] In *Valuing Animals: Veterinarians and Their Patients in Modern America*, Susan Jones argues that changes in veterinary medicine and the sociocultural role of animals cannot be understood as "processes isolated from each other."[16] In a similar vein, Abigail Woods argues that studying medical history in isolation from the veterinary profession and animal experience "reifies the nature–culture divide" by "grant[ing] a timeless universality to scientific interpretations that are in fact products of specific historical circumstances."[17] Like Jones and Woods, I argue that veterinary medicine cannot be studied in isolation from the animals themselves and the environments where health problems developed. Etienne Benson demonstrated how "traces" of the animal past found in human sources can provide rich insight into historical changes in animal–human relationships.[18] Attentiveness to

[14] Jody Hodgins, "Accessing Animal Health Knowledge: Popular Educators and Veterinary Science in Rural Ontario," in *Traces of the Animal Past: Methodological Challenges in Animal History*, eds. Jennifer Bonnell and Sean Kheraj (Calgary: University of Calgary Press, 2022), 117–136.
[15] Abigail Woods, Michael Bresalier, Angela Cassidy, and Rachel Mason Dentinger, *Animals and the Shaping of Modern Medicine: One Health and Its Histories* (Cham, Switzerland: Springer, 2017), 11–12; Susan Jones, *Valuing Animals: Veterinarians and Their Patients in Modern America* (Baltimore: The Johns Hopkins University Press, 2002), 4.
[16] Jones, *Valuing Animals*, 4.
[17] Abigail Woods, Michael Bresalier, Angela Cassidy, and Rachel Mason Dentinger, *Animals and the Shaping of Modern Medicine: One Health and its Histories* (London, UK: Palgrave MacMillan, 2017), 13.
[18] Etienne Benson, "Animal Writes: Historiography, Disciplinarily, and the Animal Trace," in *Making Animal Meaning*, eds. Linda Kalof and Georgina Montgomer (East Lansing: Michigan State University Press, 2011), 3–16.

these historical changes and the experiences of different species allows for a more inclusive historical narrative that uses traces of animal, human, and environmental pasts to paint a picture of animal health realities in rural communities.

As veterinary science developed, conflicts arose surrounding licensing standards and institutional education became the standard form of accreditation for veterinarians. However, this transition did not happen overnight. In *Inescapable Ecologies,* Linda Nash argues that "once formulated, scientific ideas travel quickly."[19] Yet, many scholars have overlooked the sources that contributed to this production of knowledge on local levels in favour of professional sources written by veterinarians. Ruth Sandwell notes that farmers' responses to "book learning" were varied. Some saw scientific methods as a way to overcome environmental obstacles and prosper; others saw this transmission of knowledge as a waste of time and money.[20] In the late nineteenth century, veterinarians were few and far between in rural Ontario, often travelling long distances to treat an animal. While professional knowledge of veterinary science was available to those who could invest in veterinary education, few graduates established practices in rural communities. Until scientific knowledge became more accessible in these communities and veterinary services increasingly rivalled traditional livestock healthcare practices, many farmers continued to rely on experiential and empirical knowledge from their neighbours or, increasingly, from the popular publications they received by subscription in the late nineteenth and early twentieth centuries.

Seeking Neighbours' Experiential Knowledge

Before veterinarians became widely available, farmers relied on neighbours with knowledge of common animal health problems, often gained through experience as farmers or butchers, to cure

[19] Linda Nash, *Inescapable Ecologies: A History of Environment, Disease, and Knowledge* (Berkeley and Los Angeles: University of California Press, 2006), 9.
[20] Sandwell, *Canada's Rural Majority*, 82.

and treat their livestock. Rural historian Catharine Wilson argues that "neighbourhood was not just the people who lived near you but the basis for economic activity, social support, and the organization of day-to-day living."[21] Many neighbours in a rural community became experiential experts in a specific field. For example, William Standen brought a wealth of blacksmithing knowledge and experience with horses to his rural Ontario community. Some settlers logged trees, acted as religious leaders, or owned a general store, post office, or expensive farming equipment such as a thresher.

Horses were an asset to rural household economies and an important part of everyday life in rural Ontario. The Standen family, who had immigrated to Canada from England in 1856, relied on the skills they acquired over generations of selling, trading, and working with horses when they established their farm in Minesing, Ontario, in 1862 (also the first year of OVC).[22] They survived on little until John Standen's blacksmith shop became integral to Minesing's barter economy. To start their household, John's son William became a tenant farmer on his father's land and worked with neighbours to develop their farms.[23] Maintaining their horses' health and, in the Standen's case, that of their hogs, meant that rural settlers could work more land, harvest crops, and feed their families before selling surplus for profit.

Like other farmers, William Standen first consulted his neighbours, who had accumulated knowledge of animal husbandry, about how to solve his livestock health problems. His daily life provides a good example of how experiential knowledge disseminated throughout a small community that lacked early access to a professionally trained veterinarian. Unlike wealthy farmers

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[21] Catharine Wilson, "Reciprocal Work Bees and the Meaning of Neighbourhood," *Canadian Historical Review* 82, no. 3 (September 2001): 432.

[22] Many diaries from the time written by wealthy livestock breeders and urban individuals who had closer, quicker access to costly veterinary services do not offer the detailed observations recorded by Standen.

[23] Peter A. Russell, *How Agriculture Made Canada: Farming in the Nineteenth Century* (Montréal & Kingston: McGill-Queen's University Press, 2012), 278; Catharine Wilson, *Tenants in Time: Family Strategies, Land, and Liberalism in Upper Canada, 1799-1871* (Montréal & Kingston: McGill-Queen's Press, 2008).

and livestock breeders like James Bowman, who raised prize-winning cattle in Guelph and could afford access to veterinary care and expert advice, this was not the case for many settler farmers like William Standen.[24] Unlike most rural diaries that still exist, his diaries offer a detailed record of the state of an animal's health as it worsens and recovers. In his entries, Standen reflects on how long he could work a horse before negatively affecting its health or outlines his thought processes for determining when he felt it was necessary to call on a neighbour with experience in livestock health for help.

In developing a successful farm, the Standen family took precautions to prevent suffering a loss due to an injured or ill horse. William Standen's hard work allowed him to pay off debts, invest in new equipment, and pay for insurance to protect his family against the deficit caused by losing a horse. On March 26, 1879, he noted that he paid Guilroit $12.00 "for the mares insurance on colts."[25] He continued this practice each year, noting, for example, on March 2, 1880, "Mr. Bennett & Mr. Papineau came down & [he] gave them $7.00 for Horse insurance."[26] Standen valued his mares. He recorded their condition and limited their work hours as they neared the end of their pregnancy or to limit the effect of injury. If a mare died giving birth, he knew his ability to plough and sow would be jeopardized, putting his entire harvest into jeopardy. Issuing insurance was a specialized service offered by Papineau and Bennett to their local economy. Their service ensured that Standen would not suffer a significant loss if complications occurred in the birthing process. Social historian Liveo Di Matteo argues that the horse was essential to farming, falling third in value behind real estate and household goods and furniture. By 1892, only 10 percent of farmers in

[24] "James Bowman," 1886–1944, XR1 MSA737, James Bowman Diary Collection, Rural Diary Archive, University of Guelph Archives & Special Collections, Guelph, Ontario. https://ruraldiaries.uoguelph.ca/meet-the-diarists/james-bowman-/.
[25] William Standen Diary, March 26, 1879, 87-006/001(01), William Standen Fonds, Trent University Archives, Peterborough, Ontario. https://archives.trentu.ca/index.php/87-006-001-01.
[26] Standen, Diary entry from March 2, 1880, 87-006/001(01).

Ontario could afford to invest in livestock life insurance.[27] Recognizing that his horse's health and well-being correlated with his own success, Standen prioritized investing in insurance for his mares over repaying other debts.

In preparation for the summer growing season, Standen also recorded when he rearranged and cleaned stalls to create healthy environments for newborn livestock. On April 2, 1879, he put the lamb and "sick ewe in the place where the ram was, so as to have the spare stall in the stable when the other sheep may lamb."[28] Only two days earlier, he took a ram to Mr. Lowe, who paid him $8.00, "$1.50 for the skin & 6 ct. per lb. for the carcase."[29] During seasonal changes, farmers needed to make daily decisions to ensure the health of new animals, which correlated with their families' well-being and the economic benefit that livestock could provide through labour or sustenance. Standen decided that the best time to butcher an animal was when making room for newborns and quarantining the sick. In spring 1879, his animals produced a filly, a colt, thirteen pigs, ten lambs, a few butchered lambs, a heifer, and some rams.[30] Many ewes got sick, while the colt and eight of the pigs did not survive the spring.[31]

Recording healthcare for his animals allowed Standen to learn from his experiences and better care for sick animals in the future. For example, for the month of April that year, his diary entries contained forty-one mentions of a sick animal's symptoms or treatments over twenty-two days. He would be able to review the symptoms and corresponding treatments for that month to decipher why the animal died and take preventive measures in the future, if possible. Standen wanted to reflect on and learn from the ailments of his animals: "I found the ewe dead and one of

[27] Livio Di Matteo, "Patterns and Determinants of Wealth Inequality in Late-Nineteenth-Century Ontario: Evidence from Census-Linked Probate Data," *Social Science History* 25, no. 3 (2001): 367.
[28] Standen, Diary entry from April 2, 1879, 87-006/001(01).
[29] Standen, Diary entry from March 31, 1879, 87-006/001(01).
[30] Standen, Diary entry from April and May 1879, 87-006/001(01).
[31] Standen, Diary entry from April and May 1879, 87-006/001(01).

the lambs and the other one dying. I skinned her & cut her open to examine her, & found that the liver … [was] rotten. Everything else seemed all right."[32] Performing his own post-mortem examination to determine an animal's cause of death shows the extensive measures that he took to ensure the health of his livestock and to expand his experiential knowledge. When necessity dictated, he also turned to neighbours who had greater experiential knowledge of animal health.

In addition to examining deaths to avert future health issues, Standen kept a record of his horses' labour capabilities. In April 1879, for example, he recorded the birth and deaths of different livestock; noted how hard his horses could work and the quality of their diet; and monitored his horses' health and well-being before, during, and after they gave birth. Standen used the same process to document each colt and filly after it was born. On April 24, 1879, he recorded: "Doll's time was up last Tuesday… she is swelled a good bit under the belly, but seems able for moderate work, though I have to be very careful with them."[33] During a period of extreme discomfort in the last days of the horse's pregnancy, Doll was still in the fields working, albeit much less than before and with careful monitoring.

Standen cared deeply for and realized the necessary nature of the horse on the farm. Every spring, he noted how much and how often he was able to plough, sow, harrow, and furrow based on how healthy his horses were and their ability to work. He accounted for a horse's well-being while under pressure to get his crop in early due to unpredictable weather. On April 28, 1879, he noted, "if Doll holds out til Wednesday night I think I shall be nearly done, but it is very slow work."[34] Doll's ability to pull a plough while pregnant was crucial to allowing the Standen family to plant the crops they relied upon. Doll continued to work slowly for two days before, and within three days after foaling. Although Standen could not make do without Doll, he realized the effect that overwork and

[32] Standen, Diary entry from April 10, 1879, 87-006/001(01).
[33] Standen, Diary entry from April 24, 1879, 87-006/001(01).
[34] Standen, Diary entry from April 28, 1879, 87-006/001(01).

a poor diet could have on a horse's health and, subsequently, the health of its offspring and his own success. Monitoring his horses' health maximized his own labour each farming season.

In his documentation of changes in animal health over the months and years, Standen referenced occasions when he sought animal health advice from his neighbours. In 1884, he noted that he regularly relied on his neighbour Henry Fuller for help around the farm and often called on him for his expertise in animal health. In the 1871 census, Fuller was listed as a labourer in the Morren family's household. Then, in the 1881 census, Fuller owned a farm close to the Morren family.[35] Fuller assisted in butchering hogs and gave a second opinion on horses and cattle that were suffering from injury or sickness. On February 25, for example, Standen stopped by "the corner" on his way home from another neighbour to ask Fuller to look at his old horse, Charley. On examining the horse, Fuller suggested that Standen use a "mustard plaster bathe with hot water and cayenne pepper, and give aconite."[36]

Standen also had occasion to seek medicines for animals in his care from Alfred Morren. In 1884, he took a different horse, Nelly, to retrieve aconite from Morren before "doctor[ing her] according to orders."[37] Morren was the son of a neighbouring farmer who was later recorded as a farmer in the 1881 census.[38] He was listed as a veterinary surgeon and head of household with wife, Elizabeth, and their children in the 1891, 1901, and 1911 censuses.[39] It is unclear what type of

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[35] Statistics Canada. Census of Canada, 1871, RG31, Item ID: 40536698, Ontario, District No. 42 Simcoe North, Sub District D Vespra, page 97. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=census&IdNumber=40536698; Statistics Canada. Census of Canada, 1881, RG31-2, Item ID: 19701751, Ontario, District No. 139 Simcoe North, Sub District E Vespra, page 15. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=census&IdNumber=19701751.

[36] William Standen Diary, February 25, 1884, 87-006/001(02), William Standen Fonds, Trent University Archives, Peterborough, Ontario. https://archives.trentu.ca/index.php/87-006-001-02.

[37] Aconite is a natural herb found in mountainous regions of the northern hemisphere. Standen, Diary entry from February 25, 1884, 87-006/001(02).

[38] Statistics Canada. Census of Canada, 1881, RG31, Item ID: 19701751, Ontario, District 139, Sub District Vespra, page 15. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=census&IdNumber=19701751.

[39] In LAC's databases for the 1901 census, Alfred's name is misspelled as "Aford," and in the 1911 census, their last name was misspelled as "Marsen." Statistics Canada. Census of Canada, 1891, RG31, Ontario, North Simcoe District

training Morren undertook during this period. Many local animal health experts claimed veterinary dentist status without any official training; indeed, the push for further professionalization after the beginning of the twentieth century led to such qualifications being increasingly disputed and professional training deemed necessary to administer veterinary care legally. By the 1921 census, at the age of seventy-six, Morren was listed as a veterinary doctor and livestock raiser. His titles—first farmer, then veterinary surgeon, and finally veterinary doctor—are reflective of the increasing authority of veterinary professionals during this period. To declare this vocation and title following the implementation of the *Veterinary Practice Act* in 1920 also makes it likely that he undertook some veterinary training, possibly at OVC, the nearest veterinary college.[40]

Standen's reliance on neighbouring farmers with specific expertise became a regular part of his participation in a cooperative barter economy—typical of late nineteenth-century rural society in southern Ontario. Catharine Wilson outlines in *Being Neighbours* that "cooperative work was at the heart of neighbourhood in many ways."[41] Though Wilson refers to working bees where neighbours come together to raise a barn, quilt, thresh, or offer cooperative work in other forms, seeking a neighbour's expertise in animal health functioned similarly. Neighbours "trusted and became structurally dependent on each other. They built social capital, consisting of a good reputation, local connections, and favours owing."[42] A neighbour with a wealth of animal health knowledge was valuable and could often exchange their knowledge for farm labour or within a larger barter

139, Sub District Vespra, page 10. Available from Library Archives Canada Online: https://central.bac-lac.gc.ca/.item/?app=Census1891&op=pdf&id=30953_148171-00137; Statistics Canada. Census of Canada, 1901, RG31, Ontario, North Simcoe District 114, Sub-district A, Sub-division 2 Barrie (Town), page 8. Available from Library Archives Canada Online: https://central.bac-lac.gc.ca/.item/?app=Census1901&op=pdf&id=z000102505; Statistics Canada. Census of Canada, 1911, RG31, Item ID: 15055604, Ontario, District No. 121 South Simcoe, Sub-district 5, Sub-division 2, Barrie (Town), page 10. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=census&IdNumber=15055604.

[40] Statistics Canada. Census of Canada, 1921, RG31, Ontario, District 128 South Simcoe, Sub District Barrie Town, page 8. Available from Library Archives Canada Online: https://central.bac-lac.gc.ca/.item/?app=Census1921&op=pdf&id=e003035603.

[41] Catharine Wilson, *Being Neighbours: Cooperative Work and Rural Culture, 1830–1960* (Toronto and Montréal: McGill-Queen's University Press, 2022), 267.

[42] Wilson, *Being Neighbours*, 267.

economy involving the sale of crops and animal products, participation in bees, the use of new equipment, or help when sickness overcame a family member.[43] Animal health knowledge in the late nineteenth century was a valuable asset. People would call on neighbours with this experiential knowledge regularly to help them maintain and better the health of their animals—so essential to their sustenance and agricultural production.

The Standens regularly called on Fuller and Morren for their animal health knowledge before Morren had received the designation of a veterinarian. Their knowledge helped Standen and his sons take care of their cattle and most often assisted with difficulties foaling or when an animal was afflicted with injury or disease. On one occasion, a "mare took sick so [Standen's son, Andrew] went for Henry Fuller. [Standen] gave the mare 2 tablespoonful of turpentine, 2 of ginger, 1/2 lb. Salts, & soon after the same of turpentine, 8 spoons of whisky, 2 of castor oil, in warm water. Andrew came with Henry Fuller soon after but she got better right away. It was Flatulent Colic."[44] While the treatment worked without Fuller's help on this particular occasion, it is clear that at the first sign of animal discomfort, Standen's inclination was to seek help from Fuller. This and other remedies noted in this chapter are evidence of the kind of experiential knowledge that Douglas McCalla asserts "we no longer possess."[45] Whether homeopathic (the idea that small amounts of toxic ingredients that produce certain symptoms can train the animal's body to provide the reaction needed to ward off an illness) or allopathic (treating symptoms of the illness or injury and not the direct cause), the effectiveness of these remedies is obscured by promotional language used in popular sources and a lack of detailed accounts of treatment results.

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[43] Standen sold hay, oats, sheep, beef, veal, mutton, and lamb in addition to trading horses. Standen Diary, January 1879–December 1895, 87-006.
[44] William Standen Diary, July 18, 1893, 87-006/001(05), William Standen Fonds, Trent University Archives, Peterborough, Ontario. https://archives.trentu.ca/index.php/87-006-001-05.
[45] Dougals McCalla, *Consumer in the Bush: Shopping in Rural Upper Canada* (Toronto and Montréal: McGill-Queen's University Press, 2015), 67.

The Standens relied on Fuller for his close proximity when it came to administering treatments, manoeuvring a calf or foal during birthing emergencies, and treating more common animal health ailments. The older Morren was sought out for his ability to treat more uncommon ailments, as he could provide medicines beyond natural remedies. On September 22, 1893, for example, Standen drove into Barrie, a fifteen- to twenty-kilometre drive by horse and buggy, to ask Morren for advice. Morren recommended, "1 lbs. salts & 1 teaspoonful of Nux Vom and a mustard plaster down [a cow's] back."[46] On other occasions, Morren prescribed "liniment" for lambs,[47] "stimulants" and "injections" given by syringe to cattle,[48] or "more medicine, [at] 65 c" for a cow.[49] Morren also came to look at horses when their lameness continued. On Friday, July 12, 1895, he went to the Standens to look at their horse, Nell, where he concluded that her "lameness at times may be a spaven."[50] The terminology and treatments that he prescribed or administered suggest an increased level of animal health knowledge beyond that held by neighbours such as Fuller.

Nineteenth-century farmers worked in close proximity with their small number of livestock every day. Daily chores consisted of feeding livestock, cleaning stalls, working in the fields, clearing bush, and providing transportation, among other tasks. Consequently, the health of their animals was important. The health of a rural family's livestock was also connected to economic investments and sustenance. Being close to their animals and making daily observations afforded them the opportunity to quickly identify changes in an animal's health and environment—and protect their investments. Wealthier farmers may not have held the same close relationship with their animals as a farmer like Standen, but their animals were an investment just the same. For example, James

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[46] Standen, Diary entry from September 22, 1893, 87-006/001(05).
[47] Standen, Diary entry from June 20, 1894, 87-006/001(05).
[48] Standen, Diary entry from September 30, 1893, October 3, 1893, October 11, 1893, 87-006/001(05).
[49] Standen, Diary entry from September 28, 1893, 87-006/001(05).
[50] Spavin is a degenerative condition that leads to bone or cartilage loss, which can result in lameness. Chapter Three explores various treatments for spavin. William Standen Diary, July 12, 1895, 87-006/001(06), William Standen Fonds, Trent University Archives, Peterborough, Ontario. https://archives.trentu.ca/index.php/87-006-001-06.

Bowman, a purebred cattle breeder from Guelph, travelled west across Canada, showcasing his cattle at exhibitions every summer, and hired his nephews to work on the family estate.[51] As an "expert hobbyist," Bowman employed scientific principles, such as those prioritized at Ontario's Experimental Farm, to expand and profit from purebred cattle raising.[52] By 1914, breeders of purebred cattle, like Bowman, who were members of agricultural societies, believed that ordinary farmers still did not "think of showing" their cattle because they would be forced to compete against "professional growers and breeders."[53] However, ordinary farmers did not share the same ability to travel away from their farms to showcase livestock.

William Standen's records illustrate how his daily observations and close relationship with individual livestock made it possible for him to identify and monitor health ailments quickly. However, urbanization and the eventual industrialization of livestock farming, along with the acceptance of scientific principles, irrevocably altered the close relationship enjoyed by farmers and their livestock. The dichotomy and hierarchy between ordinary farmers and stockbreeders reflected the class-based reliance on scientific information over experiential, on-the-ground observations, similar to experiential practitioners and those who could afford the time and expense of attending a

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[51] James Bowman Journals, November 27, 1912–April 26, 1917, page 113, XR1 MS A737, Box 2, Vol. 5; and Box 1, Journals of James Bowman, 1886–1944, Bowman Family Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario, in Kyle Pritchard, "'Pleased and Thankful': James Bowman's Diary, 'Rural Profiteering', and the Great War," *Historic Guelph* - Guelph Historical Society, vol. 55 (2017, updated 2023). https://www.guelphhistoricalsociety.ca/archives/historic-guelph/volume-55/pleased-and-thankful-james-bowman-s-diary-rural-profiteering-and-the-great-war.

[52] For Ontario Experimental Farm's prize-winning cattle, see "Sessional Papers," Ontario Provincial Government, no. 13 (1884): 38–39, in Margaret Derry, *Ontario's Cattle Kingdom: Purebred Breeders and Their World, 1870–1920* (Toronto: University of Toronto Press, 2001), 105. Professionals excluded farmers from the world of purebred cattle breeding and exhibitions. However, they were "aware of the hobbyist tendencies of the purebred breeders." Farmers could not justify the high cost of purebred cattle. They recognized that purebred cattle did not have an "improved ability to gain weight" or increased profitability in the sale of beef. In the 1870s and 1880s, farmers started to value beef production. However, it was not until breeders later recognized the "impact of specialization on production levels" for dairying cattle that farmers' acceptance of purebred cattle grew. Margaret Derry, *Ontario's Cattle Kingdom: Purebred Breeders and Their World, 1870–1920* (Toronto: University of Toronto Press, 2001), 92, 105–106; James Bowman Journal, 1886–1944, XR1 MSA737, Box 1 and Box 2, Vol. 5, Journals of James Bowman, Bowman Family Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario.

[53] "Sessional Papers," Ontario Provincial Government, no. 42 (1914): 57, in Derry, *Ontario's Cattle Kingdom*, 105.

veterinary institution, as we will see later in this chapter with the rise of popular agricultural publications.

Farmers began adopting new technologies that would help them overcome their reliance on livestock for labour. In William Standen's case, this meant participating in threshing rings, where neighbours would work together using an expensive thresher purchased by Mr. Papineau to harvest each crop.[54] In Standen's later diary entries, it is evident that mechanization alleviated the extra stress placed on animals during planting and harvest seasons when they were pregnant. Nutrition for animals that Standen relied on for labour or sustenance was crucial, especially when grass or hay was limited or when contending with a poisonous weed or predator. In such cases, Standen called on neighbours to help him quickly identify, eradicate, and prevent disease outbreaks, limit injury, pain, and suffering, and assist in difficult births or early treatments for offspring. Neighbours offered support through experiential knowledge, labour, or scientific knowledge and the sale of treatments for cattle, sheep, or horses. As these were often temporary fixes or common occurrences, farmers had to seek new more permanent farming methods or solutions to preserve their livestock. At the same time, some farmers transitioned to more industrial methods of producing more livestock for sustenance and profit.

Popular Agricultural Periodicals

In Canada, parcel post was established in 1859, "free delivery" was introduced first in major cities beginning in 1874, and catalogue sales reached rural areas by 1908.[55] This change significantly

[54] William Standen Diary, August, 1879, 87-006/001(01), William Standen Fonds, Trent University Archives, Peterborough, Ontario. https://archives.trentu.ca/index.php/87-006-001-01; Wilson, *Being Neighbours*, 154–185. Wilson also notes that in 1930, *The Farmer's Advocate*, which had encouraged farmers to buy their own equipment in the past, highlighted the importance of neighbours helping neighbours: "Individualism and this so-called independence are costing agriculture a pile of money every year. Our fathers and grandfathers had the right idea." *The Farmer's Advocate* (September 4, 1930): 1304, in Wilson, *Being Neighbours*, 179–180.

[55] In Canada, these services were introduced in major cities like Montréal in 1874, then in Toronto in 1875, and developing Guelph by 1907. It finally reached rural Fergus by October 1, 1912. These dates and locations mark

affected the role of the postmaster and the part that post offices played as a space for rural community networking. As farmers started to look outward for more extensive networks in which to exchange experiential and empirical knowledge and provide preventive measures and curative treatments, animal husbandry advanced according to their access and accumulation of knowledge. Earlier in the nineteenth century, book agents travelled to sell to rural communities.[56] However, farmers began at this same time to access book knowledge in other ways, such as popular subscription-based manuals. These manuals were advertised in agricultural periodicals and rural newspapers, the same periodicals in which the provincial government announced new public health policies and legal responsibilities. It was also common for farmers to recommend animal health manuals that they had found helpful to their neighbours.[57] As farmers and settlers looked further afield for the latest animal health care practices, sources sent through the mail became more important in the years before veterinarians became more readily available in the countryside.

James Fisher, an eighteenth-century British historian, critiques that book-farming should be considered within the long history of agricultural literature that bore the "codification and appropriation of the art of animal husbandry" and the "antagonistic social relations within agricultural production." Farm labourers held experiential knowledge of agricultural practices, resulting in an "asymmetric" distribution of knowledge between them and landowners. Fisher argues that "a core motivation for publishing and buying agricultural books was to equip gentlemen with"

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significant milestones in the evolution of the postal system as it expanded throughout Canada. Forbes Moir, October 1, 1912, Forbes Moir Diary Collection, 1884–1914, Rural Diary Archive, Wellington County Museum & Archives, Fergus, Ontario, 120. https://ruraldiaries.lib.uoguelph.ca/transcribe/items/show/222. Chantal Amyot, Bianca Gendrea, and John Willis, edited by Francine Brousseau, *Special Delivery: Canada's Postal Heritage* (Fredericton: Goose Lane Editions, Canadian Museum of Civilization, and Canadian Postal Museum), 85.

[56] William Standen Diary, October 12, 1888, 87-006/001(03), William Standen Fonds, Trent University Archives, Peterborough, Ontario. https://archives.trentu.ca/index.php/87-006-001-03.

[57] Discussion about Andrew A. Gardenier's *The Successful Stockman and Manual of Husbandry* (Springfield, Mass: The King-Richardson Co, 1903). From the private collection of Helen Hanna (née Bellwood), a resident of Stayner and later, Alliston, Ontario (Simcoe County). This edition includes a blank subscription form for this manual with *The Farmer Advocate's* letterhead. Helen recalled that the local veterinarian Dr. John E. Hanna (also her husband's father) recommended the book to her father, Harvey Bellwood, a farmer and horse breeder.

"an independent source of knowledge for gentlemen" and the "means to establish full command over their farms and estates."[58] Though Fisher focuses on the eighteenth century, the same can be said for professional veterinarians looking to assert control over animal health practices in rural Ontario through the late nineteenth century and into the early twentieth century.

Editors of agricultural journals, such as *The Canada Farmer*, a journal with government affiliations that conveyed official announcements, and *The Farmer's Advocate*, a journal that prided itself on its independence from government affiliations and its support for farmers' interests, also sought to attract new subscribers among rural farmers and stock breeders. These editors had a range of backgrounds, from those with experiential knowledge to professional veterinarians with connections to the state. Doing so helped them achieve financial growth, expand their distribution network, and spread their authority. Inspired to compete for increased sales, the editors looked for ways to introduce new features in their journals: responding to readers' letters, educating livestock owners about state regulations, and commissioning articles or columns devoted to veterinary practices. These features promoted experiential, empirical, scientific, and professional approaches to veterinary medicine.

Many editors of these agricultural journals developed a dialogue with their readers. Farmers and stock breeders challenged treatments or strategies proposed by the editors, experiential experts, and veterinarians in previous issues or requested information on how to solve a common health problem facing their livestock. Some farmers and experiential experts, having found a treatment to be unsatisfactory, offered their own solutions that they believed were more effective. Correspondence columns also provided a valuable exchange of experiential knowledge, thus

[58] James Fisher, *The Enclosure of Knowledge: Books, Power and Agrarian Capitalism in Britain, 1660–1800* (Cambridge: Cambridge University Press, 2022): 262.

enabling farmers to provide better healthcare for their animals when veterinarians were largely inaccessible and costly.

The division between publications produced by experiential practitioners and those by professional veterinarians was part of a larger system of "class warfare" evident in the growth of trade unions and farmers' organizations.[59] Unlike advocates of "people's journalism," historian Paul Rutherford says that the proponents of "quality journalism" were influenced by British strategies aimed at publishing "impartial 'political intelligence', brilliant controversy, 'intellectual and moral force'," and papers that belonged to "a cause and not a party."[60] Canada's metropolitan publications adopted an "up-market strategy" to supply "up-to-date news, high-toned comments, and a wealth of special features." This approach aimed to attract readers from the "provincial hinterland," as the market for agricultural topics was inherently more limited in cities compared to rural communities.[61] Agricultural journals that were published in metropolitan regions, such as *The Canada Farmer* in Toronto, underscored the necessity for partnerships between "Capital and Labour, City and Country" to cultivate "the cause of Canadian progress."[62] However, journals like *The Farmer's Advocate* criticized the reliance on institutional or professional knowledge emanating from metropolitan sources, arguing that such knowledge often lacked essential experiential evidence.

In 1868, *The Farmer's Advocate* doubled in size to accommodate farmers' desire to learn and seek advice about the issues they faced. It published monthly editions from 1866 to 1965. Out of twenty-one agricultural journals, it was the only journal created before Confederation to survive into the mid-twentieth century.[63] William Weld, founder and initial editor, was considered a "pioneer of

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[59] Paul Rutherford, *A Victorian Authority: The Daily Press in Late Nineteenth-Century Canada* (Toronto: University of Toronto Press, 1982), 178, 181, and 208.
[60] Rutherford, *A Victorian Authority*, 57.
[61] Rutherford, *A Victorian Authority*, 57.
[62] Rutherford, *A Victorian Authority*, 178 and 180.
[63] Dorothy Mary Duke, "Agricultural Periodicals Published in Canada, 1836–1960," (MA Thesis, Montréal: McGill University Library School, April 1961), 106. https://escholarship.mcgill.ca/downloads/xd07gx338?locale=en.

good farming practices and an independently minded advocate of farmers interests" and his descendants acted as editors for the journal's lifespan.[64] The Weld family prided themselves on producing a journal that provided "professional training" and represented the interests of "agriculturalists." Weld, a "successful farmer and a breeder of superior livestock," saw the farming community as a network of professionals and viewed agricultural colleges as "refuges for impractical dreamers and political appointees."[65] He prioritized articles on "agriculture in all its branches," "the [rural] family, the home, and its surroundings," "health," and "culture in the sense of an awareness of spiritual values and an appreciation of beauty."[66] In creating *The Farmer's Advocate*, Weld transitioned from a local expert who delivered expertise between neighbours in Ontario to an agricultural journalist whose business venture offered global solutions to agricultural issues. This strategy proved popular, so much so that the journal became the most widely read of its type by the 1880s, selling 17,000 copies a month.[67] By 1944, under the editorship of a son and later, grandson, *The Farmer's Advocate*'s circulation reached 200,000.[68] The ongoing discussions within its pages until the journal ceased to publish in 1965 illustrate how the Welds actively sought readers' feedback as a way to offer relevant, practical advice and to incorporate valuable insights from other experiential and scientific experts. The Welds also published "unfavourable" correspondence that challenged prevailing views, and for this they were commended by readers.

In his quest to publish North America and England's most up-to-date experiential knowledge, Weld included excerpts from American newspapers, expert breeders, or international agricultural policy in most editions of *The Farmer's Advocate*. These excerpts supplemented articles on

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[64] Ian M. Stewart, "WELD, WILLIAM," in *Dictionary of Canadian Biography*, vol. 12, University of Toronto/Université Laval, 1990 and 2003. https://www.biographi.ca/en/bio/weld_william_12E.html.
[65] Stewart, "WELD, WILLIAM," in *Dictionary of Canadian Biography*.
[66] Duke, "Agricultural Periodicals Published in Canada, 1836–1960," 31–32.
[67] Stewart, "WELD, WILLIAM," in *Dictionary of Canadian Biography*.
[68] "The Farmer's Advocate | London Public Library," London: London Public Library, Accessed January 11, 2021. http://www.londonpubliclibrary.ca/research/local-history/local-historic-sites/farmers-advocate-plaque-no-65.

issues that faced livestock and farmers in Canada. For example, an article from New England focused on a solution that was "not drawn from theory alone but from actual practice, no less."[69] In this article, the author wrote about a controlled, clean environment he had created to treat seven sheep with horrible cases of foot rot. After cutting away the rot with a sharp knife, the author housed the sheep in a clean stable and frequently observed the sheep for cleanliness, often cleaning away manure. By publishing these types of tried-and-true methods, agricultural journals gave farmers access to a more extensive network of experiential knowledge, one that supplemented their reliance on their immediate neighbours and local community of experts.

Farmers often wrote to Weld to share the methods they used to treat common diseases such as horse distemper (also known as strangles). Horse distemper was a "highly contagious bacterial infection" in the respiratory system,[70] where an abscess or tumor would form "under or between the lower maxiliary or jaw bones [or] sometimes in other parts of the body."[71] The journal recognized the need for clean environments on countless occasions in the late nineteenth century. In the case of horse distemper, the editor acknowledged the threat posed by "bad ventilation" or "exposure to cold easterly winds," "bad horse keepers," "bad forage," and "also bad usage", where outbreaks could persist for months in a stable.[72] Bonnie Rush, Dean of the College of Veterinary Medicine at Kansas State University, provided similar environmental recommendations over 150 years later when she stressed that horses should be isolated and housed in a "warm, dry, and dust-free environment." However, she adds that horse caregivers should control fly populations if possible because flies can "transmit [the] infection mechanically."[73] Despite their less scientific descriptions,

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[69] Henry Boynton, Woodstock, Vt., *The New England Farmer*, as found in *The Farmer's Advocate* VI, no. 5 (May 1871): 69.
[70] Anthony P. Cavender and Donald B. Ball, "Home Cures for Ailing Horses: A Case Study of Nineteenth-Century Vernacular Veterinary Medicine in Tennessee," *Agricultural History* 90, no. 3 (2016): 311.
[71] "Distemper in Horses," *The Farmer's Advocate* V, no. 6 (June 1870): 86.
[72] "Distemper in Horses," *The Farmer's Advocate*, 86.
[73] Bonnie R. Rush, DVM, MS, DACVIM, "Strangles (Distemper) in Horses," *Merck Veterinary Manual* (May 2019). https://www.merckvetmanual.com/horse-owners/lung-and-airway-disorders-of-horses/strangles-distemper-in-horses.

The Farmer's Advocate recognized and portrayed the importance of clean, healthy environments to horses' health, just as today's veterinarians do.

Weld's popular journal also criticized certain treatments that had been widely used in the past but were deemed ineffective or inhumane by the time of publication. In one article published in 1870, *The Farmer's Advocate* stated that when treating horses for distemper, farmers should avoid bleeding or using "valueless distemper powders and oils altogether."[74] Rather, "hav[ing] patience" and giving a "nourishing diet" with "flax seed tea," "strong hay tea four or five times a day with a little saltpetre," or "a gentle stimulant" composed of a "tablespoon of allspice, genetian or ginger, mixed in a wine-glass full of nitric ether, alcohol, or good strong and pure whiskey, [would] do wonders, when followed up night and morning, or even once per day" should help the natural course of the disease.[75] While maintaining "strict cleanliness," "bathing the nostrils in milk and water [was] advisable, and steaming the head [was] also [considered] a very excellent remedy in severe cases."[76]

Editors of *The Farmer's Advocate* shared what they believed to be the best practices at the time. Today's veterinarians rely on laboratory analysis of bacteria to confirm the infection and prescribe nonsteroidal anti-inflammatory drugs (NSAIDs) and antibiotics for severe cases. However, they recognize that although horse distemper is a bacterial infection, antibiotics may prolong the disease by "delaying maturation and drainage of abscesses" while reducing the "horse's natural buildup of immunity, making it more susceptible to reinfection." And while NSAIDs help to "reduce pain and fever, and improve appetite," veterinarians continue to recommend simpler treatments like "applying warm compresses to the sites of swollen lymph nodes to help abscesses

[74] "Distemper in Horses," *The Farmer's Advocate*, 86.
[75] "Distemper in Horses," *The Farmer's Advocate*, 86.
[76] "Distemper in Horses," *The Farmer's Advocate*, 86.

drain more quickly" in addition to "flush[ing]" ruptured abscesses with "dilute iodine."[77] The methods to diagnose and treat horse distemper may have significantly changed since the advent of antibiotics and other medicines, but like the veterinarians of today, these agricultural journals outlined ways to address pain, swelling, and appetite loss, warned about the need to limit contamination, and promoted the importance of maintaining a clean environment.

The Farmer's Advocate also received articles from readers describing their experiences combatting horse distemper. One correspondent in August 1870 suggested that instead of using these treatments to encourage the natural course of the bacterial infection, half an eggshell full of pine tar once a day for three days would work.[78] Another correspondent wrote in 1871 of the great success they had in combatting the disease by spreading "half a spoonful of pine tar … on a linen cloth" and using this to cover a horse's bit "two or three times" throughout the winter.[79] Though it is not likely that these medicines eliminated infections, pine tar was known for its ability to soothe sore throats by veterinarians in the late nineteenth and early twentieth centuries.[80] Anthropologists Anthony Cavender and Donald Ball contend that smearing pine tar on a horse's tongue was also used to treat outbreaks of bronchitis in the United States in the nineteenth century. [81] A reader from South Mountain, Ontario, wrote that despite feeding their horses alongside other diseased horses and using the same troughs and pails when travelling, their horses had not contracted horse distemper during one of the worst winters for the disease.[82] This seems to have been a lucky incident, as we now understand that horse distemper is spread through bacterial infections. Nevertheless, the story demonstrates the editor's openness to publishing diverse ideas on how the

[77] Rush, "Strangles (Distemper) in Horses."
[78] William Weld, "Horse Distemper," *The Farmer's Advocate* V, no. 7 (August 1870): 119.
[79] "Horse Distemper," *The Farmer's Advocate* VI, no. 2 (February 1871): 37.
[80] George F. Korinek, *Veterinary Medicines: Their Actions, Uses, and Doses* (Veterinary Science Association of America, 1917), 141.
[81] Cavender and Ball, "Home Cures for Ailing Horses," 326.
[82] "Horse Distemper," *The Farmer's Advocate*, 37.

disease spread, at a time when farmers and scientists were working to better understand its transmission. It was important for farmers to decide for themselves whether to follow this advice or earlier advice from another author who had recommended limiting horses' exposure to other horses carrying the disease.[83] The different strategies found in correspondence columns like those in *The Farmer's Advocate* facilitated the exchange of experiential knowledge and provided farmers with an avenue for accessing a wide range of "tried-and-true" solutions to animal health care problems without having to seek costly or delayed veterinary visits.

Initially, *The Canada Farmer*, which had ties to a network of professional veterinarians in Toronto, expressed that "all party political questions [would] be studiously avoided."[84] In its first issue, the journal's editor, W. F. Clarke, who grew up on a farm outside London, Upper Canada before entering into publishing, and publisher George Brown, who was educated in Scotland before becoming a businessman in Toronto and establishing the *Toronto Globe*, "earnestly desir[ed]" to establish a correspondence section that would "afford the Farmers of Canada an ever-open medium for addressing their brother Agriculturalists throughout the province."[85] In early issues, the journal published their answers to a series of questions about regulations, annual meetings, or topics that ranged from farming equipment to bookkeeping or, in fewer issues, situations they had encountered.[86] However, in later issues, the correspondence section became much more extensive, with numerous pages of information for readers. In the beginning, efforts to bridge the divide between farmers and professionals by including pertinent discussions in "a candid and conciliatory tone" using "the aids of science … systematically" were commendable and showed how experiential

[83] Weld, "Horse Distemper," *The Farmer's Advocate*, 119.
[84] "To the Farmers of Canada!" *The Canada Farmer* 1, no. 1 (January 15, 1864): 8.
[85] S. Lynn Campbell, "CLARKE, WILLIAM FLETCHER," in *Dictionary of Canadian Biography*, vol. 13, University of Toronto/Université Laval, 1994. https://www.biographi.ca/en/bio/clarke_william_fletcher_13E.html; J. M. S. Careless, "BROWN, GEORGE," in *Dictionary of Canadian Biography*, vol. 10, University of Toronto/Université Laval, 1972. https://www.biographi.ca/en/bio/brown_george_10E.html; "Correspondence," *The Canada Farmer* 1, no. 1 (January 15, 1864): 8.
[86] "Correspondence," *The Canada Farmer* 1, no. 3 (February 15, 1864): 40.

and scientific knowledge could coalesce. However, as I discuss later in this chapter, the once harmonious relationship between farmers and professionals was marred by the slow growth of animosity, rivalry, and the increasing competition for veterinary authority. This fractured relationship created a tense and conflicted atmosphere.

Having recognized a need to provide veterinary advice to readers regularly, *The Canada Farmer* implemented a veterinary column in its second issue, published in February 1864.[87] W. F. Clarke worked alongside a team of writers, including many of "the province's most prominent agriculturalists," and veterinary professor and founding principal of OVC, Andrew Smith.[88] The writing team expressed the value of "co-operation [between] the farmer and the veterinarian" and stressed that "a knowledge of the anatomy and physiology of the animal tribes [was] necessary, and an acquaintance with the symptoms and modes of curing the various maladies to which they are subject" to ensure farmers' "intelligent treatment of disease."[89] This inaugural column emphasized that a good relationship between farmers and veterinarians reduced animal deaths resulting from the unnecessary spread of incurable contagious diseases like glanders. The writing team emphasized that in England, "eminent veterinarians" had once believed that "impure air and insufficient nourishment, combined with hard labour," caused the disease. However, they argued that "not one case in five occur[ed] from that cause." Although the writer mentioned the contagious nature of the zoonotic disease, they did not discuss proximity to an infected animal, isolation, or quarantine measures in this article. Instead, like their predecessors, they advocated for "proper ventilation of stables, sufficient supply of food, and keeping the animal in a high state of health."[90] Farmers who called on veterinarians to identify disease experienced less loss of life because, as the editor argued,

[87] "The Veterinary Department," *The Canada Farmer* 1, no. 2 (February 1, 1864), 27.
[88] Evans, "SMITH, ANDREW," *Dictionary of Canadian Biography*.
[89] "The Veterinary Department," *The Canada Farmer*, 27.
[90] "The Veterinary Department," *The Canada Farmer*, 27.

"the veterinary profession [were] the means, in great measure, of preventing mischief by checking [the] prevalence" of contagious diseases.[91] The writing team also stressed that this relationship between veterinarians, farmers, and livestock was needed to prevent "Horses to the value of thousands of pounds [from being] annually destroyed in consequence of having become affected by this incurable and loathsome disorder," as had occurred in Europe.[92] However, at this point in time, the profession had done little to build these relationships, preferring instead to use an "up-market strategy" when writing to farm audiences rather than encouraging the accessibility of veterinarians in rural communities.[93]

In early issues of *The Canada Farmer*, the tone of the writing was professional, with many letters to the editor including scientific terms and descriptions.[94] For example, when addressing a situation where bloodletting was used to treat distemper quickly following its diagnosis in 1872, the professional writing team argued that this was only "recommend[ed] … in some urgent cases."[95] They suggested that the course of treatment include the abscess "be poulticed" "and after due time should have been opened and the matter allowed to escape," while "the patient should be well fed, and given plenty of fresh air."[96] These treatments are similar to those the horse owner and their local expert attempted. However, the farmers had used a turnip poultice, warm water, and salt, and opened the sore only far enough to release blood, not matter, from the abscess. *The Canada Farmer* used terminology like "the patient" to refer to animals undergoing treatment and quickly condemned any attempt at treatment not executed "under the charge of a competent practitioner." They were quick to remind readers that some people "maltreated" animals and were "entirely ignorant" "about

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[91] "The Veterinary Department," *The Canada Farmer*, 27.
[92] "The Veterinary Department," *The Canada Farmer*, 27.
[93] Rutherford, *A Victorian Authority*, 57.
[94] This raises questions about the audience and who engaged with editors. Were they other experts or local experiential experts with some scientific understanding? Or was the professional writing team using scientific language when printing readers' questions?
[95] "Diptheria in Horses," *The Canada Farmer* 4, no. 9 (September 15, 1872): 314.
[96] "Diptheria in Horses," *The Canada Farmer*, 314.

the nature" of ailments, with the owners of horses prone to "taking the opinion of every Tom, Dick, or Harry."[97] The editor advised readers to "use a little more rational judgement in the treatment of the dumb animals placed under his care."[98] In contrast to this journal's approach to devalue a farmer's ability to react quickly and make an accurate diagnosis, and to ignore the close relationship farmers had with their livestock, *The Farmer's Advocate* exercised a farmer-centric approach that valued quick observations and experiential knowledge. However, given that veterinarians were still largely inaccessible in rural communities, it is clear that the publishers of *The Canada Farmer*, though warranted in their desire for farmers to seek the services of an experienced veterinarian, misunderstood the ability of ordinary farmers to do so, dismissing any attempts by farmers to execute similar treatments.

The desire to shape agriculture in Canada was a driving force behind the establishment of many agricultural periodicals. Disagreements led to amalgamation or further division of some journals. These divisions stemmed from editorial disagreements, political influences, and efforts to control the publication of agricultural information and practices. An example of one such division is *The Canada Farmer*, which was founded in 1847 after an amalgamation but then went through several divisions and amalgamations, with revivals occurring in 1864, 1869, and again in 1873. In 1869, after editing the new *Canada Farmer* for five years, Reverend W. F. Clarke then left to create *The Ontario Farmer*.[99] Many editors of these journals held positions on provincial and federal boards of agriculture and utilized periodicals to inform Canadian farmers about public health measures and advancements developed by institutions and farmers worldwide.

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[97] "Diptheria in Horses," *The Canada Farmer*, 313 and 314.
[98] "Diptheria in Horses," *The Canada Farmer*, 314.
[99] For a comprehensive list of earlier agricultural journals, their formation, and their demise, please consult Dorothy Mary Duke's "Agricultural Periodicals Published in Canada, 1836–1960."

Centralized instruction also provided a platform for the state to disseminate knowledge about the risks associated with unidentified diseases to those who could afford to attend urban veterinary institutions such as OVC in Toronto. The Toronto Board of Agriculture's affiliation with agricultural journals and veterinary institutions facilitated the state's dissemination of veterinary knowledge and education on the legal responsibilities of animal owners. Prominent members of agricultural boards and veterinary colleges, many of whom served as editors of some of these popular agricultural journals, communicated debates and policy developments from their meetings. They advised farmers about new legal responsibilities, changes to the profession, and the latest advancements in veterinary medicine. For example, George Buckland, a prominent English agriculturalist and a member of the Royal Agricultural Society of England, returned to Canada as the first professor of agriculture at the University of Toronto in 1851. He delivered lectures on the history, breeding, and management of animals and collaborated with Andrew Smith to standardize veterinary training. Buckland was also joint proprietor (alongside a Toronto lawyer, William McDougall) of *The Agriculturalist and Canadian Journal*, a new publication following the amalgamation of the *British American Cultivator* and the original *Canada Farmer* (before it was renamed *Canadian Agriculturalist* in 1849 and again in 1864 to become the second iteration of *The Canada Farmer*), which he and his colleagues used as a vehicle to distribute relevant animal health information.[100]

The Canada Farmer aligned itself with the provincial Board of Agriculture to transmit up-to-date agricultural policies and initiatives. This semi-monthly journal provided 128 pages for a minimal subscription fee and free postage, making it "the best bargain" at the time.[101] In its first eight months

[100] Upper Canada Board of Agriculture Journal, "First Annual Report, 1851–1852," *Transactions—Toronto*, 1 (July 1855): 246, and "To the farmers of Canada!" *Canada Farmer—Toronto*, 1 (January 15, 1864): 8, as found in Duke's "Agricultural Periodicals Published in Canada, 1836–1960," 25, 26 and 29; Ann MacKenzie, "BUCKLAND, GEORGE," in *Dictionary of Canadian Biography*, vol. 11, University of Toronto/Université Laval, 1982. https://www.biographi.ca/en/bio/buckland_george_11E.html.

[101] This section refers to the second iteration of *The Canada Farmer*. "The Canada Farmer," *The Public Ledger, and Newfoundland General Advertiser* VI, no. 74, September 15, 1865.

after it was restored, *The Canada Farmer* reached "unparalleled" success, circulating twenty thousand copies per issue. A newspaper based in Newfoundland claimed this was "unprecedented" for Canadian agricultural journals and still considered significant for American journals.[102] Like its earlier iteration, *The Canada Farmer* promised readers that "official announcements of the Board [of Agriculture] [would] be sent to the public through [their] columns."[103] With "cordial support [from] the Board of Agriculture," George Brown, William Clarke, and their writing team of professional agriculturalists were the source for "official announcements from the [government]."[104] However, not everyone was as enthusiastic about Brown and his professional and civil colleagues' power over animal health and veterinary medicine.

The Farmer's Advocate's founding editor William Weld recognized a need to offer advice and correspondence that addressed farmers' animal health concerns. He provided a platform to exchange empirical knowledge that drew on readers' experiences and experts' knowledge over long distances.[105] He debated the effectiveness of experiential and scientific experts' advice and listened to readers' advice for government bodies. Leading up to the second general election held in the province of Ontario in late March 1871, a reader from England wrote that many valued *The Farmer's Advocate*'s "unique position to publish without the sole support of a political party."[106] As a result of their mission to deliver tried-and-true advice, Weld was met with hostility from political leaders who were determined to exert their own political party's authority over animal health practices and policies. As editor of *The Farmer's Advocate*, Weld travelled to Toronto for a board of agriculture meeting where he was met with opposition from both the Conservative and Liberal parties, with

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https://news.google.com/newspapers?nid=59&dat=18650915&id=9BYHAAAAIBAJ&sjid=fDUDAAAAIBAJ&pg=4327,936794&hl=en.

[102] "The Canada Farmer," *The Public Ledger, and Newfoundland General Advertiser*.

[103] "Our Pedigree," *The Canada Farmer* 1, no. 1 (January 15, 1864): 9.

[104] "Our Pedigree," *The Canada Farmer* 1, no. 1 (January 15, 1864): 9.

[105] Bowman, "Dipping, Dosing, Drenching: Managing Unhealthy Beasts on British Farms," 2 and 13.

[106] *The Farmer's Advocate* VI, no. 3 (March, 1871).

political leaders condemning Weld for not supporting their cause. However, Weld argued that they were not addressing farmers' concerns and subsequently asked his readers if the journal should become more political and support some agricultural experts in their entrance into politics.[107] Readers responded that *The Farmer's Advocate* should "continue [on the same] course without intermeddling politics."[108]

Steadily, as tensions rose over the pursuit of authority between experiential and professional experts and the popularization of science grew at the end of the nineteenth century, editors of popular agricultural journals sought to include more scientific knowledge. After a call for subscribers to add "one name" to the list of subscribers, *The Farmer's Advocate* raised enough money to commission articles from international agricultural experts in fields of concern to farmers.[109] In April 1874, for example, Weld commissioned an ongoing collection of articles from the Hon. X. A. Willard, President of the New York State Dairymens' Association, and Professor L. B. Arnold, Secretary of the American Dairymens' Association, for *The Farmer's Advocate*.[110] Willard's first article was on the manufacturing and marketing of early or spring cheese, where he discussed the effect of seasonal temperature changes on cows' milk production and the quality of cheese and prices at market.[111] Arnold's first article focused more on the "special care" that farmers should give their cows in the spring,[112] such as increasing their feed with early cut hay and good water before bringing them in for milking. If a farmer waited until the cows came in for milking, he argued that many cows would become weak and thin after giving birth, due to suffering from pain and having cold

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[107] "Politics," *The Farmer's Advocate* VI, no. 1 (January, 1871): 1; "To Our Readers," *The Farmer's Advocate* VI, no. 2 (February, 1871): 17; "Politics," *The Farmer's Advocate* VI, no. 5 (May, 1871): 65.
[108] "To Our Readers," *The Farmer's Advocate* VI, No. 2 (February, 1871): 17.
[109] "To Our Subscribers," *The Farmer's Advocate* IX, no. 4 (April, 1874): 49.
The Farmer's Advocate later included advertisements, enticing readers to collect two new subscribers by offering a copy of *Law's Veterinary Adviser*. *The Farmer's Advocate* XXX, no. 373 (January 1, 1895): 23.
[110] "To Our Subscribers," *The Farmer's Advocate* IX, no. 4 (April, 1874): 49.
[111] X. A. Willard, "The Manufacture and Marketing of Early or Spring Cheese," *The Farmer's Advocate* IX, no. 4 (April, 1874): 50.
[112] L. B. Arnold, "The Spring Care of Cows," *The Farmer's Advocate* IX, no. 3 (March, 1874): 40.

extremities. Arnold contended that these symptoms of starvation were prevalent and often referred to as "spring poor," which led to "poor and watery" milk. Not providing this care was detrimental to the cows and made their milk unsuitable for human consumption, which was reflected in the market value.[113] Feeding cows with better quality hay earlier in the season allows the farmer to increase their yield of butter and cheese. He argued that increasing the cow's nutrition also assists with the birthing of calves, which prevents the loss of life and decreases the monetary risks associated with replacing this cow. Oats, barley, root vegetables, and other greens would have more nutritional benefits than corn.[114] Today, dairy farmers use corn as a carbohydrate for energy source.[115] By disseminating professional veterinarians' expertise alongside farmers' experiential knowledge, *The Farmer's Advocate* provided insight to livestock–human relationships and how people may have reduced animal suffering and financial hardships.

By 1880, *The Farmer's Advocate* had become North America's most widely read agricultural periodical.[116] But in February of that year, the journal had lost two subscribers, one of whom said the journal had not done enough to criticize Prime Minister Sir John A. Macdonald's national policy for a tax on corn, using only "gentle hints as if afraid of giving offence." The other subscriber noted it was not in readers' best interest that the journal "applied to Sir L. Tilley [Minister of Finance] to take the duty off corn." Though both withdrew their subscription based on tariffs, Weld's response reveals a desire to facilitate informed debates that would propel agriculturalists:

> Let them go. Though unwilling to part with old subscribers, we are glad to say that we have the confidence and hearty support of thousands of independent farmers throughout the Dominion; and we write not "by gentle hints, as if afraid to offend," but boldly and fearlessly we oppose what we know to be opposed by the interests of

[113] "The Spring Care of Cows," *The Farmer's Advocate*, 40.
[114] "The Spring Care of Cows," *The Farmer's Advocate*, 40.
[115] "Feed Grains for Beef Cattle," *Beef Research*, March 2024. https://www.beefresearch.ca/topics/feed-grains-for-beef-cattle/.
[116] Stewart, "Biography – WELD, WILLIAM," *Dictionary of Canadian Biography*.

> farmers, and advocate for their interest. And we are willing at any time to insert communications from subscribers, even though their opinions are opposed to ours. Even at the risk of offending a few narrow-minded partisans, our paper shall be an independent, outspoken journal. We profess to endeavor to advocate the farmer's interest in the manner we deem best. Our pages have always been open for correction and furnishing the best information to farmers. Neither party or sect has been favored with intent, but we have aimed to do the greatest good to the largest number.[117]

Although the government enforced the standardization of veterinary practice and institutional training by developing laws and regulations, it is clear that farmers who could not access or afford veterinary services initially valued the advice and debates that openly took place in this independent publication.

As the need for more advanced technical and scientific methods to prevent the destruction of animals unable to recover from injuries and illness grew, experiential experts and veterinarians sought to reach rural communities through popular publications. After accidental bone fractures, for example, *The Farmer's Advocate* recommended that in such instances, the farmer "must act promptly … before a veterinary surgeon [could] be called." The veterinary column's professional author instructed farmers first to determine the severity of the break, the direction of the break, and its relationship to "soft tissues." The author described the difference between simple and compound fractures, then outlined how to determine the difference based on the circumstances of the incident and the symptoms of each type of broken bone, instructing the farmer to reduce swelling by applying "splints and bandages; and in severe cases, put[ting] the patient into a sling." However, the author cautioned that with compound fractures, farmers should be aware of "violent inflammation and fever set[ting] in" and the need to treat the wound to reduce chances of "suppuration

[117] "The Farmer's Paper – Its Independent Course," *The Farmer's Advocate and Home Magazine* XV, no. 2 (February, 1880): 28.

(formation of pus), and gangrene."[118] These instructions enabled farmers to administer an emergency response that stabilized the injured animal and would ensure the effectiveness of later veterinary treatments. By providing these instructions, the authors of these columns encouraged "the scientific farmer [to approach] agriculture professionally as his study and his business."[119] A column dedicated to veterinary medicine addressed an increasing demand for knowledge of common livestock health ailments and provided a popular platform for bridging the gap between experiential and professional animal health knowledge. Providing some basic scientific knowledge to farmers also helped build a relationship between farmers, experiential experts, and professional veterinarians.

The popular journals also published or reprinted articles by veterinarians. In the September 1884 issue of *The Farmer's Advocate*, E. W. H. of Montréal wrote a column entitled "Veterinary Notes for Farmers" that dealt with colic and treatments for spasmodic colic.[120] Other columns in the mid-1880s addressed concerns about accidents and fractured bones, contracted hooves, lameness, vaccination for cow-pox, birthing, and different forms of fever. When John Weld took over *The Farmer's Advocate* after his father, William, passed away in 1891, he also introduced columns dedicated to veterinary medicine, first as a sub-section of a "Questions and Answers" column and then intermittently as its own column by February 1, 1894, before offering a column entitled "Veterinary" as of February 15, 1895.[121] These later columns addressed recent scientific findings, looked at current challenges to animal health, or responded to a reader's concerns. Columns specifically addressing dairy, poultry, garden and orchards, stock-raising, and the apiary initially responded to general concerns, then later gave an avenue for veterinarians to discuss specific animal

[118] "Veterinary: Accidents," *The Farmer's Advocate and Home Magazine* XIX, no. 227 (November 1884): 335.
[119] Fisher, *The Enclosure of Knowledge*, 246.
[120] "Veterinary Notes for Farmers," *The Farmer's Advocate and Home Magazine* XIX, no. 225 (September, 1884): 270.
[121] *The Farmer's Advocate and Home Magazine* XXXIX, no. 351 (February 1, 1894): 47 and 49; *The Farmer's Advocate and Home Magazine* XXX, no. 376 (February 15, 1895): 73 and 74.

health challenges. Thus, these columns offered a mix of experiential and professional veterinary knowledge to farmers in rural regions.

The Canadian government also adopted some ideas from *The Farmer's Advocate*, such as establishing experimental farms to aid in the development of uniform policies. Buckland and his colleagues, in affiliation with the provincial Board of Agriculture and with the support of the Government of Ontario, set up a twenty-five-acre experimental farm at the University of Toronto before expanding to a four hundred and seventy-one-acre parcel that eventually became the Ontario Agricultural College in Guelph in 1871.[122] The Government of Canada also set up the Central Experimental Farm in Ottawa and later affiliated experimental farms across Canada as part of this research network in 1886, before it began housing livestock in 1889. The government's research, like the experiential and increasingly scientific research sought by Weld, was not limited "to the biological sciences." Instead, it "extended to more social scientific studies such as agricultural economics and business practices."[123] However, Weld actively opposed this decision and the government expenses associated with developing experimental farms. He accused government officials and institutional leaders of stealing this idea from discussions in *The Farmer's Advocate*. Weld believed that a farm independent of the state, like their own farm, Weldwood Farm in London, Ontario, was better positioned to address farmers' concerns and conduct experiments without political interference.[124]

Despite the debate over government control, it is clear that the move to increase power from institutional authorities and the push for standardization resulted in a consolidation of power and centralized animal health policies that regulated the legality of animal healthcare practices and

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[122] MacKenzie, "BUCKLAND, GEORGE," in *Dictionary of Canadian Biography*. Before OVC officially moved to Guelph in 1922.
[123] Anderson, "Field Experiments," 88–89.
[124] Weld wrote about their farm in a column entitled "Weldwood Farm Jottings." Duke, "Agricultural Periodicals Published in Canada, 1836–1960," 32.

humans' responsibilities to maintain animal health. This consolidation also placed pressure on experiential experts.

Articles published in Canadian agricultural journals and newspapers also advised the public about the risks associated with disease and the dangers associated with their potential to spread among crowded livestock and humans rapidly. Federal and provincial veterinarians sought different ways to eradicate disease, such as glanders, one of the oldest known horse diseases. Governments had attempted to regulate and control outbreaks of this fatal, incurable bacteriological zoonotic for centuries; a cure still escapes scientists today.[125] Agricultural journals regularly reported outbreaks of glanders as a way to quickly prevent the disease from spreading through horses kept in close quarters.[126] By 1884 in Ontario, the law stated that a veterinarian needed to "make an immediate inspection." If the animal was diagnosed with glanders, "the animal must be destroyed and burned or buried within twenty-four hours."[127] In 1897, the Canadian government drafted regulations for diagnosing and immediate destruction of horses. Section 13 of these regulations required state-appointed veterinarians to verify that imported horses did not have glanders and that they had been relocated from a region without glanders.[128] However, in order to properly examine, test, and treat animals, the state recognized that people needed to know how to identify the symptoms.[129] Concerns about zoonotic disease led governments to exercise more centralized control over animal healthcare and to professionalize veterinary medicine.

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125 George Dougall Robins, *A Study of Chronic Glanders in Man with Report of a Case: Analysis of 156 Cases Collected from the Literature and an Appendix of the Incidence of Equine and Human Glanders in Canada* (Montréal: Bibliothèque médécine vétérinaire, May, 1908) systematically notes the cause, symptoms, treatments, duration, results, and pathological findings alongside the patient characteristics (occupation, age, sex). In this study, the most common causes of glanders infection in humans were mishandled biopsies of infected equines (for example, accidental cases during dissection) or while caring for glanderous equines.

126 "The Ontario Law About Glanders," *The Globe (1844–1936) Toronto, Ont.,* July 23, 1884.

127 "The Ontario Law About Glanders," *The Globe,* July 23, 1884.

128 John J. McGee, Clerk of the Privy Council, *Order in Council Containing Regulations Relating to Animals' Quarantine and Health of Animals* (Ottawa: The Government House, 1897), 9.

129 The British Board of Agriculture recommended that research on "points connected with the pathology of glanders" should proceed "without further delay." "The Prevention of Glanders," *The British Medical Journal* 1, no. 2006 (1899): 1426.

After the devastation that glanders caused during the South African War, the Canadian Army Veterinary Corps (CAVC) recognized a need to educate people about glanders. The corps adopted an approach similar to that of cholera and smallpox. For its part, the Government of Ontario found that educating students in public schools was an effective way to identify horses with the disease.[130] People were instructed to look for swollen, glossy eyes, mucous falling from a horse's eyes and nose, swollen glands, a fever, and cutaneous ulcers.[131] However, since symptoms could remain dormant for an extended period, horses were able to transmit the disease without showing symptoms. Yet, the state introduced penalties to enforce owners' legal responsibility to recognize and control the spread of disease when horses with glanders were knowingly or unknowingly sent to auction.[132] In 1911, the Canadian government also implemented a thirty-day quarantine and protocol for administering the mallein test on imported horses,[133] while forbidding entry to unbroken horses that could not be reliably tested.[134] Implementing these measures addressed the fears of professional veterinarians and officials that undetected disease could spread through valuable livestock populations. However, it was the dissemination of these initiatives in newspapers and popular journals that informed farmers about their new role in combatting the spread of glanders. Despite limited and untimely access to veterinary services, the centralization of power and veterinary authority fuelled tensions between the popularizers of animal health knowledge and professional veterinarians, with both groups seeking to increase their authority and influence among farmers.

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130 "The Sanitation of Toronto," *The Globe,* Toronto, February 6, 1911.
131 During post-mortem analysis, veterinarians also found pulmonary ulcers. William G. Clarence-Smith, *Disease of Equids in Southeast Asia, c. 1800*–1945, as found in Karen Brown and Daniel Gilfoyle, *Healing the Herds* (Athens: Ohio University Press), 133.
132 In 1906, the Minister of Agriculture declared that isolation, quarantine, and diagnostic measures were the "only effective [way to] deal with the disease." Special Despatch to *The Globe*, "Agricultural Estimates: Spread of Glanders Difficult to Control the Department's Work, Mr. Ames Criticizes the Montréal Harbor Policy Mr. Brodeur Shows the Improvements Made by the Government Supplementary Estimates Under Consideration in the House," *The Globe,* Toronto, May 5, 1906.
133 Special Despatch to *The Globe*, "No Change in Quarantine," *The Globe,* Toronto, March 24, 1911.
134 The mallein test was first developed in 1890 as a diagnostic agent administered to an equine's eye to detect glanders within forty-eight hours. Chapter Four discusses the mallein test and glanders further. "No More Unbroken Bronchos," *The Gazette*, Glenboro, Manitoba, March 8, 1907.

Professional Condemnation of the Popularization of Animal Health Knowledge

Popular animal health manuals played a crucial role in bridging the gap between experiential and professional knowledge of animal health. These manuals, authored by individuals, some of whom were professionals, addressed the demand by farmers for easily accessed knowledge and offered a means to disseminate information effectively. However, many state and institutionally trained veterinarians condemned their publication. In the mid-nineteenth century, these lengthy manuals, which served as general resources, included animal health instructions alongside various household recommendations. Over time, they became more specific, using scientific descriptions to educate farmers. *The Successful Stockman and Manual of Husbandry* was at the forefront of this effort. It featured an extensive number of anatomical drawings and anatomical terminology to help farmers learn about veterinary medicine. The authors of another popular manual published around the turn of the twentieth century, *The Veterinary Science*, went so far as to offer certificates upon completion of their distance education course. Despite their efforts to assist farmers in learning basic veterinary science, professional veterinary authorities—those trained in veterinary institutions—denounced the publication of *The Veterinary Science* by the London (Ontario) Veterinary Correspondence School and medicinal pamphlets produced by those who had undergone professional training but sought to share veterinary knowledge through distance education formats.[135] *The Veterinary Science* became particularly controversial when readers from other countries began using the school's certificate to support their applications for veterinary licences.

Initially, in the late nineteenth century, professional veterinarians had acquiesced to those producing extensive popular animal health manuals at a time when veterinary services were limited. During this period, many popular animal health manuals were sold by subscription from

[135] During a meeting of the American Veterinary Medical Association in Toronto in 1911, members called for the suppression of all correspondence school material by notifying post office authorities about "fraudulent" training course material. Barker and Evans, *Century One*, 106.

advertisements in popular journals like *The Farmer's Advocate* or by travelling book agents. James Fisher argues that popular agricultural literature "could be used to undermine the customary knowledge gained through labour, undermining both a way of living and the status of common husbandmen and agricultural workers within the farm, estate, or wider commercial market."[136] In eighteenth-century Britain, the "resistance to book-farming takes on a new significance as a symptom of a deeper tension between old labour-based and new book-based systems of knowledge, which mapped onto class struggles over control of the intellectual powers of production during the rise of agrarian capitalism."[137] With the rise of industrialization in Canadian agriculture, some farmers in Ontario also likely "resisted" this "enclosure of knowledge."[138]

However, by the late nineteenth century, some farmers began purchasing popular animal health manuals. Despite frequent updates, these manuals contained claims about treatment methods and disease management practices that many professionals refuted. These claims were based on experiential knowledge and did not meet the scientific rigour that professional veterinarians aimed to uphold. Eventually, the proposition that these manuals could facilitate accreditation as a veterinarian emboldened resistance by professional veterinarians.

Despite being eventually condemned, it is clear that these animal health manuals found in rural archives across southern Ontario were a popular, cost-efficient, and accessible source of experiential and veterinary knowledge for people living in rural communities. Francis Home, a physician from Edinburgh who wrote a treatise on agricultural chemistry, described early versions of these manuals as "a 'book of experiments' or a periodical to communicate experimental husbandry."[139] However, as professional veterinarians gained authority at the turn of the twentieth

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[136] Fisher, *The Enclosure of Knowledge*, 262.
[137] Fisher, *The Enclosure of Knowledge*, 262.
[138] Fisher, *The Enclosure of Knowledge*, 262.
[139] Francis Home, *The Principles of Agriculture and Vegetation* (London: A. Millar in the Strand, and A. Kincaid and J. Bell in Edinburgh, 1756), 202–207, as found in Fisher, *The Enclosure of Knowledge*, 165.

century and veterinary science proved instrumental in successfully eradicating diseases, later editions of these animal health manuals began to incorporate more veterinary science knowledge. These manuals offer a lens into the realities of animal health care and the animal–human relationship in rural communities. Experiential and later professionally trained authors explained scientific knowledge of anatomy and anatomical changes with age, reactions to environmental changes and weather conditions, and provided preventive and emergency tips. Farmers could access basic scientific information in each manual, and in subsequent editions, publishers addressed concerns communicated by readers.

A dedicated and successful farmer, William Standen was committed to improving the health of his livestock. In addition to advice from knowledgeable neighbours, he also sought to learn more about animal health practices and veterinary medicine. In one of his diary entries, he jotted down some strategic purchases he had made at the nearby general store: a "Sweatpad for Topsys collar, $1.25 c., Mr. Garret, Book Agent, came with "The Path of Wealth," $1.90. Gave a conditional order for a Stock Breeders Book, $4.50 c. if I do not tell him not to send it before 15 Feb 1889," five months later.[140] Standen's record of purchasing religious books, like *The Path of Wealth: Light From My Forge* for $1.90, which focused on the relationship between religion and economic prosperity, alongside his consideration of a new stock breeder's manual for $4.50, shows the diverse (religious and scientific) knowledge he sought out to improve his farming practice and become a successful farmer.[141] *The Stock Breeders Manual*, despite his note about its significantly higher cost compared to other books, was a purchase that Standen believed would benefit his farming practice.

[140] William Standen Diary, October 12, 1888, 87-006/001(03).
[141] T. S Linscott, F. R. Beattie, E. C. B. Hallam, and R. W. Woodsworth, *The Path of Wealth, or, Light From My Forge: A Discussion of God's Money Laws, the Relation Between Giving and Getting, Cash and Christianity* (Brantford, ON; St. John, N.B: Bradley, Garretson, 1888).

These animal health manuals were valued by many Ontario farmers, and were passed down through private family collections or donated to public archives. Farmers cherished them for their practical and scientific information, such as information related to livestock breeding and birthing practices. After OVC created an obstetrics course in 1883 (discussed in a later chapter), articles referenced advice from obstetrics professors and slowly adopted the use of terms like obstetrics.[142]

Rural settlers prioritized formal and informal knowledge differently according to what they already knew and their ability to pay the costs associated with institutionalized veterinary training. Farmers recognized that a manual with hundreds of pages devoted to treating animal health issues they might encounter on their farms was more cost-effective than relocating to undergo professional veterinary training at an institution or calling in a veterinarian over long distances.[143]

While the animal health manuals do not depict how farmers actually implemented animal healthcare, their sales indicate there was demand by farmers to acquire knowledge that would help them meet common animal health challenges in unique and ever-changing environments. According to James C. Scott, "logic of actual farming is one of an inventive, practiced response to a highly variable environment, [whereas] the logic of scientific agriculture is, by contrast, one of adapting the

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[142] *The Farmer's Advocate* featured professors' articles in their veterinary columns that addressed the treatment of animals immediately following birth. For example, to address scouring in calves in August 1878, Professor James Law from Ithaca, New York, recalls the state of calves' bowels immediately following birth. "Scouring in Calves – Veterinary," *The Farmer's Advocate and Home Magazine* XIII, no. 8 (August 1878): 172. Popular manuals also referenced veterinary professionals' advice. For example, *The Successful Stockman and Manual of Animal Husbandry* recognized the work of Dr. Charles B. Michener, V.S., Inspector of Bureau of Animal Industry and Professor of Pathology and Obstetrics at New York College of Veterinary Surgeons, albeit in this case in general cattle diseases, an "authority," the authors noted, that "[could not] be questioned." Andrew A. Gardenier, *The Successful Stockman and Manual of Husbandry* (Springfield, Mass: The King-Richardson Co, 1903). This manual also includes a list of terms that farmers should know, if they didn't already. The idea for a course based solely on obstetrics at OVC was established in 1883. James Mills, *Ninth Annual Report of the Ontario Agricultural College and Experimental Farm, December 1833* (Toronto: Ontario Agricultural College, 1884), 194; C. A. Zavitz, "Student Notebook, Materia Medica — Veterinary Obstetrics," 1885–1886, University of Guelph McLaughlin Archives, RE1 OAC A0813, Box 1, 1.

[143] Two decades earlier, in 1863, attending Andrew Smith's veterinary course cost $5.00, and students were required to have already attended his previous free courses. This cost likely increased two decades later, when Standen was contemplating his purchase and by the time popular animal health manuals were produced in numerous editions at the turn of the twentieth century. Lisa Cox, "Veterinary Education in Canada: The Early History of the Ontario Veterinary College," *University of Guelph, Barker Veterinary Museum*, https://barkerveterinarymuseum.uoguelph.ca/veterinary-education-in-canada-the-early-history-of-the-ontario-veterinary-college/.

environment as much as possible to its centralizing and standardizing formulas."[144] As popular manuals evolved, their approaches to farming environments changed and their inclusion of scientific knowledge grew. For example, as veterinary science advanced, they transitioned from advocating for the benefits of fresh air and ventilation while restricting cold air movement to emphasizing methods that would effectively sanitize stalls (such as applying manufactured products to stall walls, as we will see in later chapters) to prevent the spread of contagions. Authors of popular animal health manuals framed their advice using visual and sensory knowledge alongside scientific terminology, aiming to make it accessible to the "humblest reader."[145] They believed that knowledge of veterinary science alone should not dictate who could physically provide healthcare for livestock.

As James Fisher conveys, popular authors "simultaneously borrowed from and criticized folk knowledge, partly through the production of books."[146] The authors valued farmers' dedicated and daily observations for accurate diagnoses, as demonstrated by William Standen's records of observations. By valuing "intelligent farmers" observations and their close interactions with animals in shared environments, the authors attribute authority to the farmer. While they outlined how heavily farmers should rely on their text, the authors also attributed some authority to farmers, emphasizing that their intelligence was indeed rooted in their observational and experiential knowledge of animals and their environments. For example, Andrew Gardenier, an expert in physiology and author of *The Successful Stockman and Manual of Husbandry*, reassured farmers that by carefully observing not only their own livestock but also neighboring animals that became ill, along with reading their manual closely, they could improve their ability to diagnose and treat diseases promptly.[147] Other authors contended that farmers' desire to acquire scientific knowledge should

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[144] James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven and London: Yale University Press, 1998), 301.
[145] Gardenier, *The Successful Stockman and Manual of Husbandry*, xi.
[146] Fisher, *The Enclosure of Knowledge*, 50.
[147] Gardenier, *The Successful Stockman and Manual of Husbandry*, 35.

define their intelligence. Regardless, it is evident that popular animal health manuals enhanced farmers' ability to interpret and address animal health issues while drawing on their own experiential knowledge.

The Domestic Encyclopedia of Facts or Farmers, Mechanics, and Household Manual by J. Gurnley Thompson, A.M., was published by Schuyler Smith and Co. in London, Ontario in 1879, a period when the demand for animal health lectures at OVC was increasing.[148] Marketed as an extensive household manual, this seven hundred and forty-six-page manual was sold exclusively by subscription from Odebolt, Iowa, to a reader whose copy was donated to the Simcoe County archives, two hundred kilometres from Toronto and Guelph's OVC campuses and two hundred and sixty kilometres from the London Veterinary Correspondence School.[149] It claimed to contain "information of solid value and practical utility for workingmen of all trades, occupations, and professions, the stock raiser, the household, and every family who wants to save money; containing a remedy for every ill, a solution for every difficulty, and a method for every emergency."[150] Detailed chapters on horses, mules, cattle, sheep, swine, domestic animals, poultry, dogs, bees, and insects contrasted chapters on accidents and injuries, the family physician, recipes, and "How to be your own lawyer."[151] Its expert author emphasized animal health and promoted the relevance of this veterinary information as "entirely reliable," providing facts of "inestimable value" "to every Farmer, Merchant, and Mechanic in the land."[152] As a rich source of experiential knowledge, early animal health manuals like *The Domestic Encyclopedia of Facts or Farmers, Mechanics, and Household Manual*

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[148] Alexander H. Brodie, "Subscription Publishing and the Booktrade in the Eighties: The Invasion of Ontario," *Studies in Canadian Literature* 2, no. 1 (1977): 98.
[149] Other publications list London, Ontario, as the location of Schuyler Smith and Co.'s main office. Therefore, although, *The Domestic Encyclopedia of Facts or Farmers, Mechanics, and Household Manual* was produced in the United States, it was also published in Canada. J. Gurnley Thompson, *The Domestic Encyclopedia of Facts or Farmers, Mechanics, and Household Manual* (971.36, Simcoe County Archives, 1879), front cover.
[150] Thompson, *The Domestic Encyclopedia*, title page.
[151] Thompson, *The Domestic Encyclopedia*, table of contents.
[152] Thompson, *The Domestic Encyclopedia*, vii.

outlined ways for new and experienced farmers to make their livestock farming practices more "efficient" and their legal rights and responsibilities to animals at the time of publication.[153]

In 1879, Thompson included extensive discussions on knowledge that he considered important. Many who worked with horses, like William Standen, understood that a horse's teeth, for example, could provide information about the animals' age and health. Thompson provided an illustration to ensure that "dishonest dealers [could not] attempt to disguise age, by reproducing the mark in the corner teeth by means of a hot iron or caustic" (Figure 1.1),[154] though he recognized that this was "easily detected by a horseman" or those with experiential knowledge because the mark was "usually overdone."[155] Thompson also warned readers that "dishonest dealers, at fairs and auctions, resort to scheme[s]" that mask animal health concerns and some dealers may disguise "groggy lameness in one leg … by making the motion even," known as "diamonding, beaning, balancing, or wedging."[156] "These ruffians," he argued, also use a method called "firing" where the "worn-out horse" is "torture[d]" using a "lash." The horse was "so barbarously flagellated, that under the influence of terror of the further application of his whip, [the horse's] attention is withdrawn from the disease, he feels not the lesser pain, but trots off heedless of his lameness, or at least showing it much less." Thompson generally warned readers that "whenever there is much punishment, or a threat of it, while showing a horse, BE SURE THERE IS SOMETHING TO CONCEAL."[157]

Thompson's devotion to warning new farmers or those who were not privy to this experiential knowledge provides insight into some ruthless animal–human relationships at the time.[158] In documenting these encounters, he also highlights the value that popular animal health

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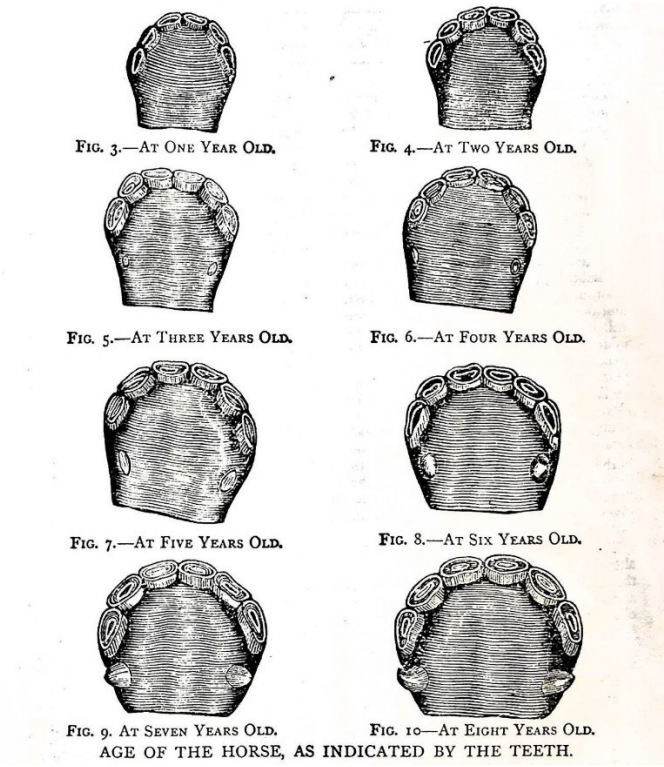
[153] Jody Hodgins, "Accessing Animal Health Knowledge: Popular Educators and Veterinary Science in Rural Ontario," in *Traces of the Animal Past: Methodological Challenges in Animal History*, eds. Jennifer Bonnell and Sean Kheraj (Calgary: University of Calgary Press, 2022), 121.
[154] Thompson, *The Domestic Encyclopedia*, 20.
[155] Thompson, *The Domestic Encyclopedia*, 20.
[156] Thompson, *The Domestic Encyclopedia*, 20–21.
[157] Thompson, *The Domestic Encyclopedia*, 21.
[158] Thompson, *The Domestic Encyclopedia*, 21–25.

manuals placed on a positive livestock–owner relationship. His cautionary notes encouraged farmers to consult a veterinarian to examine an animal, if necessary, before purchase, in order to forego more costly expenses that may occur afterwards.

Figure 1.1: An illustrative description of how to determine a horse's age based on their teeth



Source: Thompson, *The Domestic Encyclopedia*, 19.

Near the end of the nineteenth and into the twentieth century, these popular animal health manuals contained more veterinary science advice for rural livestock owners. *The Stockman Guide and Manual to Husbandry* was no exception. Although three editions of the publication were discovered in two of the rural county archives consulted for this chapter, the edition I focus on comes from the private collection of a family with an extensive history of breeding and racing horses. The provenance available with this source provides insight into how this edition may have been used on their family farm, located on the outskirts of Stayner, a rural town north of Toronto, at OVC in

Guelph, and at the Veterinary Correspondence School in London. Subsequent generations of this family passed down this book, highlighting how the owners valued the knowledge it contained. This also underscores the educational impact of *The Stockman Guide and Manual to Husbandry* for the next generation of farmers.[159]

Before veterinarians became widely accessible in rural communities, experiential and scientific expert authors used visual imagery, sensory descriptions, and simple explanations to help farmers interpret animal suffering. The 1903 edition of the six hundred and eighty-six-page manual, distributed through subscription by King-Richardson Company in Springfield, Massachusetts, one of the largest subscription firms since 1891, included detailed anatomical drawings, or flip-up drawings.[160] On first opening this manual to show me, the owner instantly painted a vivid picture of the unique, detailed anatomical diagrams contained within. The drawings or "Manikins" of a horse and cow's circulatory system, muscles, skeleton, organs, and reproductive systems were a reflection of editor-in-chief Andrew A. Gardenier's expertise in physiology (Figure 1.2).[161] Gardenier provided rural animal owners with a detailed understanding of the anatomy of animals, along with information on treatments, as an aid to help them quickly assess, diagnose, and treat animals, or know when to seek further assistance from an experiential expert or veterinarian without the need for a post-mortem autopsy or butchering.[162] Gardenier included efficient treatments and quickly

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[159] Stayner is located nearly 150 kilometres north of Toronto, over 110 kilometres north of Guelph, and over 200 kilometres north of London. It is a significant location in the context of this study due to its proximity to major professional veterinary education institutions and producers of a globally popular distance education manual. Provenance of Andrew A. Gardenier's, *The Successful Stockman and Manual of Husbandry* (Springfield, Mass: The King-Richardson Co, 1903). This edition was from the private collection of Helen (Bellwood) Hanna, a resident of Stayner and later, Alliston, Ontario; Gardenier, *The Successful Stockman and Manual of Husbandry*, ix.

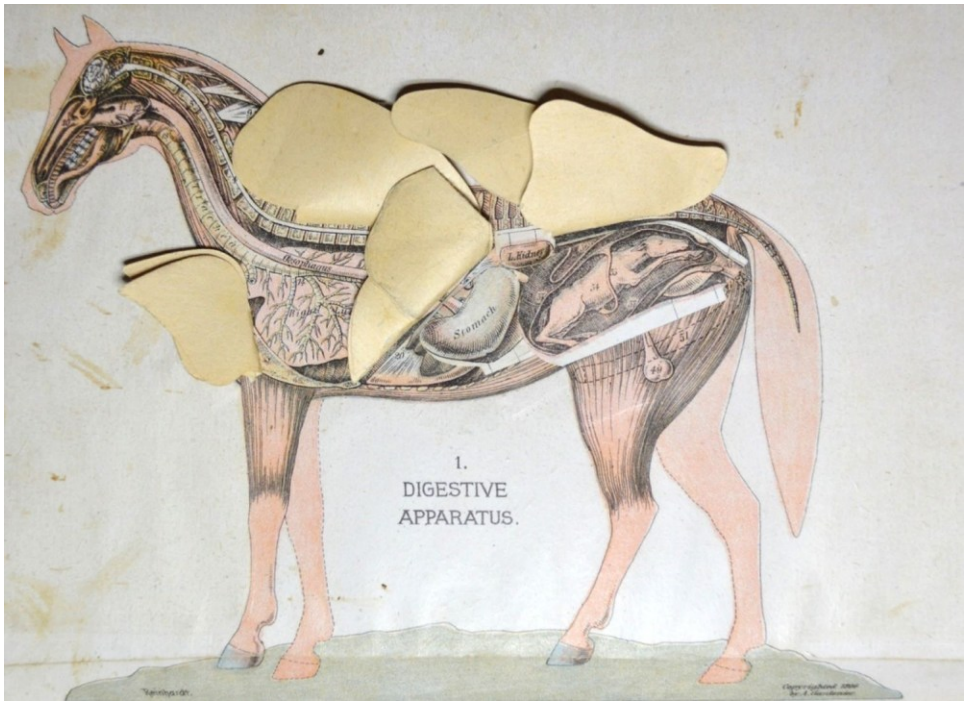
[160] The King-Richardson Co. also had a publishing office in Toronto. However, it also took advantage of new tariff laws that allowed educational books to be sold at a lower duty rate. John Tebbel, *A History of Book Publishing in the United States*, vol. 2: *The Expansion of an Industry* (New York: R. R. Bowker Co., 1972), 459–61; Gardenier, *The Successful Stockman and Manual of Husbandry* (Springfield, Mass: The King-Richardson Co, 1903), ix; Hodgins, "Accessing Animal Health Knowledge," in *Traces of the Animal Past*, 124.

[161] Gardenier, *The Successful Stockman and Manual of Husbandry*, 1.

[162] Gardenier received a PhD in physiology and arranged anatomical manikins for *The Lancet's* first volume in 1890.

accessible knowledge about animal anatomy to answer farmers' calls for experiential and scientific veterinary knowledge.

Figure 1.2: Anatomical flip-up diagram of a horse in *The Stockman Guide and Manual to Husbandry*



Source: Gardenier, *The Successful Stockman and Manual of Husbandry*, 1.

In short, the detailed anatomical drawings served as a companion to farmers' own experiential knowledge. Historian Eric Boyle claims that quackery and empirical approaches "predominantly used the symptoms of disease as the data upon which to base diagnosis and treatment, and often included a mistrust of anatomy and physiology."[163] However, the two streams of knowledge were not mutually exclusive. Some medical professionals created anatomical drawings and distributed them in popular manuals acquired by farmers. These anatomical drawings facilitated the transmission of veterinary science to improve farmers' livestock health practices. For example,

[163] Eric Boyle, *Quack Medicine: A History of Combating Health Fraud in Twentieth-Century America* (Santa Barbara, California: Praeger), 5.

farmers knew that changing weather could cause an animal to develop a cough and that animals were most susceptible to pneumonia in the spring and fall or after suffering from influenza. An institutionally trained expert in anatomy, Gardenier appealed to farmers by offering anatomical illustrations and descriptions of symptoms, methods of diagnoses, and treatments. He anatomically described different complications and symptoms of influenza: inflammation of the pharynx, myocarditis, pericarditis, encephalitis, and meningitis, among others, alongside anatomical drawings.[164] Popular authors like Gardenier included basic [scientific and experiential] descriptions of the cause (contagion or environmental), symptoms, and the best treatment options and anatomical changes at different stages to differentiate between similar illnesses.[165] This approach helped readers determine a course of action quickly.

Animal health experts' translations of animal suffering illustrate how the animal–human relationship evolved along with the introduction of scientific veterinary knowledge in popular animal health manuals. As humans became more educated on animal anatomy, they were better equipped to interpret animal suffering, provide healthcare, and seek assistance from an expert neighbour or veterinarian. Authors of *The Stockman Guide and Manual to Husbandry* were confident that their instructions would prove successful because they based their advice on farmers' careful observation of animals' responses and symptoms. However, translating this veterinary information into practice proved challenging when farmers grew "impatien[t]" and sought immediate results—which only served to highlight farmers' strong reliance on their livestock in the late nineteenth and early twentieth centuries.[166]

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[164] Gardenier, *The Successful Stockman and Manual of Husbandry*, 77, 95–96, 97–98, 103, 104.
[165] J. E. Hodgins and T. H. Haskett, *The Veterinary Science* (HRB-HH-0009, Museum of Dufferin Archives, Dufferin County, 1907), 108 and 113.
[166] Gardenier, *The Successful Stockman and Manual of Husbandry*; Hodgins and Haskett, *The Veterinary Science*.

In the early 1870s, creators of various iterations of veterinary acts in Ontario claimed that they did not seek to limit who could practise "the veterinary art," but to ensure the public and courts could distinguish "between mere empiricism and professional skill and ability."[167] Initially, membership in the Ontario Veterinary Medical Association, established in 1874, required a diploma "from a recognized college" and the support of two members, along with a membership fee.[168] Later in 1879, the Ontario Veterinary Association allowed those who resided in Ontario, had graduated with a certificate from OVC, and paid a membership fee to use the title of veterinary surgeon.[169] Those who used this title without permission were fined as much as $5 to $50.[170] Globally, as far away as New Zealand and as close as the United States, graduates of the London (Ontario) Veterinary Correspondence School sought to use their distance education certificate when seeking accreditation.[171] The correspondence school offered a home-study course, textbook and diploma, which they claimed was the "equivalent to a thorough practical course in a Veterinary College."[172] After years of accreditation changes that followed a continuing "lack of public interest in distinguishing between qualified and unqualified practitioners," professional and institutional

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[167] *Annual Report of the Commissioner of Agriculture and Public Works for the Province of Ontario on Agriculture and Arts for the Year 1872* (Toronto: Hunter, Rose, 1873), 202, in C. A. V. Barker and Margaret Evans, *Century One: A History of the Ontario Veterinary Association, 1874–1974* (Guelph: Distributed by the Authors, 1976), 384.

[168] Barker and Evans, *Century One*, 1.

[169] Barker and Evans, *Century One*, 30.

[170] Barker and Evans, *Century One*, 30.

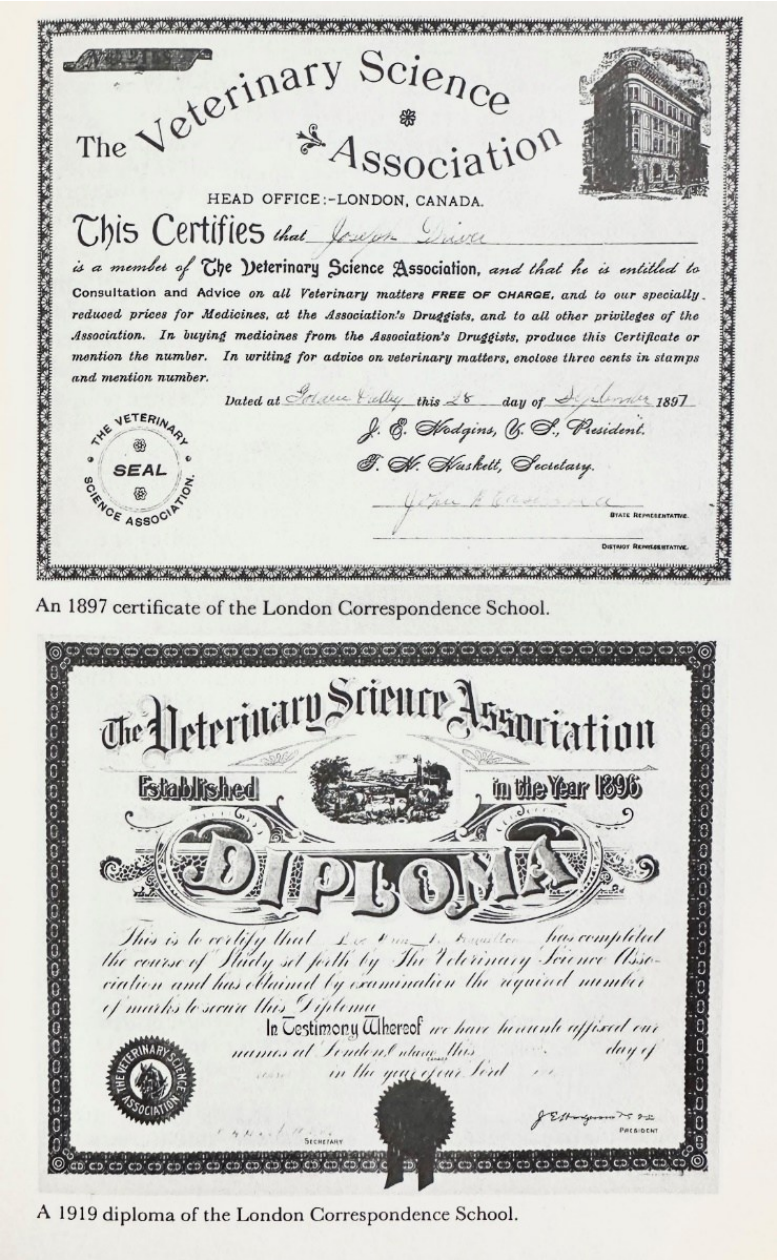
[171] Veterinary historians argue that the London Veterinary Correspondence School and its popular manual became a "notorious nuisance" in Canada, the United States, and countries as far away as New Zealand. In 1925, Miss Pearl Dawson sought a professional membership from the New Zealand Veterinary Association. In 1926, Joseph Milne, who was practising in the United States, sought to register in Ontario. The Deputy Minister of Agriculture advised the Premier's office and licensing board that the London Veterinary Correspondence School's diploma "never had any legal standing" and only the "Veterinary Practice Board could grant a certificate of legal force." Milne, who depended on practising veterinary medicine to provide for his family, continued to work as a veterinarian in Ontario. Then, in 1936, the local inspector of the Health of Animal Branch and the president of the Central Canada Veterinary Association prosecuted Milne and fined him $50 and costs. Eventually by 1944, Milne obtained a licence to practise based on his experience from the Minister of Agriculture. This type of back-and-forth was common among those who had previously practised veterinary medicine in rural areas. However, different professional and civil bodies often disputed the standard of practice and training necessary for official licensing. C. A. V. Barker, "History of Veterinary Medicine," *The Canadian Encyclopedia*, February 7, 2006, updated on December 16, 2013, https://thecanadianencyclopedia.ca/en/article/history-of-veterinary-medicine; Barker and Evans, *Century One*, 129–131; O. P. A. Ferguson Papers, Agriculture Department – General, 1926 in Barker and Evans, *Century One*, 130.

[172] Hodgins and Haskett, *The Veterinary Science*, Preface.

veterinarians sought to "protect" institutional graduates from "uneducated empirical practitioners."[173] C. A. V. Barker, a veterinarian and founder of the Barker Museum of Canadian Veterinary History, along with historian Margaret Evans, argued that the notion that a certificate from the London Veterinary Correspondence School could satisfy accreditation requirements was unthinkable.[174] However, Barker and Evans contend that hundreds of people continued to "naively" offer "[a] very handsome but worthless diploma" from this distance education course in support of their accreditation and licensing (Figure 1.3).[175]

[173] Barker and Evans, *Century One*, 20, 101, 108, 136, 235, and 250.
[174] "Veterinarians in Ontario," *The Farmer's Advocate and Home Magazine* LIII, no. 1342 (June 13, 1918): 1003; Barker and Evans, *Century One*, 112, n. 31.
[175] Barker and Evans, *Century One*, 106.

Figure 1.3: Diplomas granted by the London Veterinary Correspondence School following the completion of its distance education course in 1897 and 1919



Source: Barker and Evans, *Century One*, 107.

Two different editions of *The Veterinary Science* are in the rural county archives consulted for this chapter. The six hundred and sixty-three-page text was extremely popular—publishing one hundred and seven editions by 1907 (eighteen in its first year and at least seventy-seven in the next

two years), with copyright in at least seven countries.[176] The earlier edition is undated and the edition containing a "revised and enlarged preface" was published in 1907. In the earlier edition, it is clear that the authors, J. E. Hodgins, V.S. V.D., President of the Veterinary Science Company that ran the London Veterinary Correspondence School, and T. H. Haskett, D.V.D., a self-styled veterinary dentist and the school's secretary treasurer, promoted their manual as a cost-effective and time-saving substitute for institutional training that was "equivalent to a thorough practical course in a Veterinary College."[177] In condemning their approach, Barker and Evans argued that their claims convinced "gullible persons" to enroll in the correspondence course.[178] The distance education manual, they say, was at the "level … of a first-aid manual" where "science was a misnomer."[179] Nevertheless, given the popularity of this distance education source, neglecting its historical value for lack of scientific rigour would be to overlook an internationally popular animal health manual that many livestock owners valued and relied upon to respond to emergencies and practice animal healthcare at the time.[180]

Hodgins and Haskett's publication effectively closed a gap in the "social organization [and accessibility] of agricultural knowledge" by using simple yet comprehensive language.[181] They contended that their distance education manual was of "untold value" as it provided thorough explanations of "causes, symptoms, and treatments," equipping livestock owners and farmers with essential information to care for their livestock.[182] They offered a "prominent" "index of

[176] Barker and Evans, *Century One*, 127–128.
[177] Hodgins and Haskett, *The Veterinary Science* (971.36, Simcoe County Archives, Earlier Undated Edition), Preface.
[178] Veterinarians who underwent formal veterinary training and fought to establish and license high veterinary standards often referred to people who sought animal health knowledge from popular manuals as "gullible." Barker and Evans, *Century One,* 127.
[179] Barker and Evans, *Century One,* 127.
[180] Hodgins, "Accessing Animal Health Knowledge," in *Traces of the Animal Past*, 126–127.
[181] James Fisher, "The Master Should know More: Book-Farming and the Conflict Over Agricultural Knowledge," *Cultural and Social History* 15 (no. 3): 317.
[182] Hodgins and Haskett, *The Veterinary Science*, Earlier Undated Edition, Preface.

symptoms," which made diagnosing and treating livestock straightforward.[183] In later editions, they incorporated illustrations and plates, added a chapter on domestic animals, and restructured a chapter titled "The Disease and Treatment of Sheep and Pigs" to offer specific descriptions that would help farmers distinguish between diseases and their corresponding treatments. Hodgins and Haskett contended that they "remain[ed] comprehensive, concise and abreast of the times in the latest and most approved methods of treatment."[184] However, they "work[ed]" to "retain its simplicity of expression."[185] Hodgins and Haskett believed that by introducing more scientific insights, animal anatomy, and a focus on the diseases and injuries affecting livestock, they could satisfy demands for knowledge and introduce veterinary science to rural readers.[186]

Hodgins and Haskett's practical approach to treating disease was important to readers. The authors recognized the importance of farmers' daily observations and encouraged them to seek the services of professional veterinarians when, for example, dealing with an incurable, fatal zoonotic disease like glanders, which could lay dormant for some time before symptoms showed. In this case, Barker and Evans lauded their recommendation to readers to "send for a veterinary inspector if glanders was suspected."[187] On the other hand, Barker and Evans asserted that "hog cholera was confused with anthrax, paralysis was listed among diseases, and rabies was described as originating spontaneously in hot weather" and "crude [unscientific] instructions were given for castration and spaying, the bleeding of a horse with fleams, the enucleation of a dog's eye without anesthesia, [and] the sewing of wounds with the small carriage trimmers' twine "got at any hardware store" and no mention of asepsis."[188] Though warranted, these criticisms overlook the popularity of the journal

[183] Hodgins and Haskett, *The Veterinary Science*, Earlier Undated Edition, Preface.
[184] Hodgins and Haskett, *The Veterinary Science* (HRB-HH-0009, Museum of Dufferin Archives, Dufferin County, 107th Edition, 1907), 'Revised and Enlarged' Preface.
[185] Hodgins and Haskett, *The Veterinary Science*, 107th Edition, 1907, 'Revised and Enlarged' Preface.
[186] Barker and Evans, *Century One,* 128.
[187] Barker and Evans, *Century One,* 128.
[188] Barker and Evans, *Century One,* 128.

and the effect these descriptions may have had on animal healthcare practices globally. Though Hodgins and Haskett included more scientific knowledge of anatomy, disease, and medicines in subsequent editions, their instructions were founded on experiential knowledge, which *The Farmer's Advocate* argued allowed rural people "fired with ambition to obtain knowledge" to be "diverted from the right path into devious [informal practices]," divergent from advances in veterinary medicine.[189]

Persistent pleas from professional veterinarians to the Government of Ontario to resolve issues with accreditation and close the London Veterinary Correspondence School continued until 1920. Seventy-two students at OVC petitioned that they were placed in an "illogical position" due to the existence of correspondence schools. It made "little sense" for them to continue investing their time and money into obtaining an institutional degree when they could earn a diploma or certificate from the London Veterinary Correspondence School with significantly less effort and investment.[190] A clause stipulating that "non-graduates who had been practicing in Ontario for a number of years [could] continue as before but not to give them the title of Veterinary Surgeon or the privileges accompanying a college degree" made licensing those with informal training contentious.[191] Ontario's Veterinary Practice Board questioned Hodgins about the integrity and ethical standards of his instruction. As an "honorary graduate" of OVC, Hodgins had initially received a certificate due to his accreditation as a veterinary surgeon and was listed as a veterinary surgeon in the directory for the city of London, Ontario, for five more years—two years longer than *The Veterinary Science*'s publication.[192] On the other hand, Haskett, a non-graduate, was denied certification and left the

[189] "The Veterinary Correspondence School-a Fake," *The Farmer's Advocate and Home Journal* XLV no. 896 (November 24, 1909): 1571.
[190] Barker and Evans, *Century One,* 128.
[191] O. P. A. Ferguson Papers, Agriculture Department, 1926, as found in Barker and Evans, *Century One,* 132.
[192] J. E. Hodgins and T. H. Haskett, *The Veterinary Science* (Toronto: Heal & Fleming, 1896, London: The Veterinary Science Company, 1897, 1905, and 1906), Title Page; Barker and Evans, *Century One,* 129.

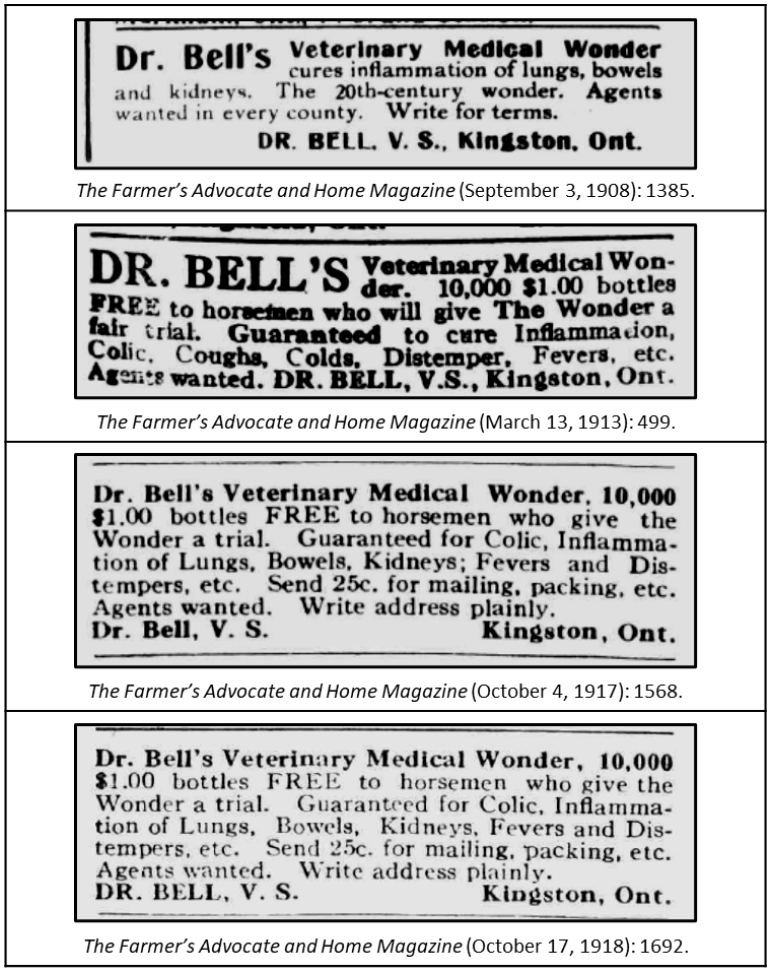
veterinary publication business.[193] The implementation of Ontario's *Veterinary Science Practice Act* in 1920 was the culmination of almost fifty years of rivalry between experiential and scientific experts and competition between popular and institutional certification and methods of disseminating veterinary knowledge.[194] However, some professional veterinarians recognized the ongoing need for farmers to have timely access to medicines. As a result, popular publications that catered to farmers' demand for animal health knowledge and treatments continued to create challenges for the veterinary profession even after the Act sought to regulate veterinary practice in 1920.

Cure-all Medicine

Creators of early cure-all medicines also published pamphlets aimed at helping farmers treat their livestock without involving a veterinarian, despite the gradual increase of veterinarians in Ontario's rural areas. Some of the medicines were developed by institutionally trained veterinarians or chemists, yet administered at a farmer's discretion (such as the Fleming Brothers, discussed in Chapter 3). Dr. George Bell, developer of "Veterinary Medical Wonder," a popular cure-all medicine that he claimed would treat different livestock, also operated in this grey area of veterinary certification. His pamphlets and medicinal bottles are commonly found in many rural Ontario archives. Dr. Bell marketed his medicines using animal health pamphlets that provided readers with basic veterinary knowledge and instructions for administering different doses of his "wonder drug" for various types of livestock. Over time, he put out more advertisements and promotional marketing materials, including pamphlets to help farmers diagnose and provide first-aid treatments (Figure 1.4).

[193] Barker and Evans, *Century One,* 129.
[194] Hodgins, "Accessing Animal Health Knowledge," in *Traces of the Animal Past*, 129.

Figure 1.4: Advertisements for Dr. Bell's Veterinary Medical Wonder became increasingly descriptive, offering more promotional material over time



Source: The Farmer's Advocate and Home Magazine (September 3, 1908): 1385; *The Farmer's Advocate and Home Magazine* (March 13, 1913): 499; *The Farmer's Advocate and Home Magazine* (October 4, 1917): 1568; *The Farmer's Advocate and Home Magazine* (October 17, 1918): 1692.

Recognized as "one of Canada's leading veterinarians for over forty years," according to pamphlets from 1933, Bell graduated from the OVC in Toronto in 1890. He practised in the United States for fifteen years before returning to Kingston in 1895, where he opened and served as principal of the Kingston College of Veterinarians.[195] However, after only two years in this role,

[195] Stated on the title page of promotional animal health pamphlets published in 1933. Dr. George Bell, "Prevention, Diagnosis and Treatment of Common Disease of Livestock" (A2019.017 PF2157F1I2, Grey Roots County Archives, Grey County, 1933).

Bell's "entrepreneurial spirit" clashed with the conservative and academic focus of the medical faculty.[196] As a result, in 1897, Bell offered to resign in exchange for a negotiated settlement of $125, the ability to appoint his successor—who lasted less than a year before being replaced by Bell's rival, Dr. A. P. Knight—and the resolution of claims against the College's board.[197] The circumstances surrounding Dr. Bell's resignation illustrates the tension between the desire to profit from providing accessible veterinary medicine to rural communities and the emphasis on institutional standards and administering treatments by professional veterinarians. His marketing strategies highlight the inaccessibility of veterinary care for many farmers and the common livestock health challenges they faced.

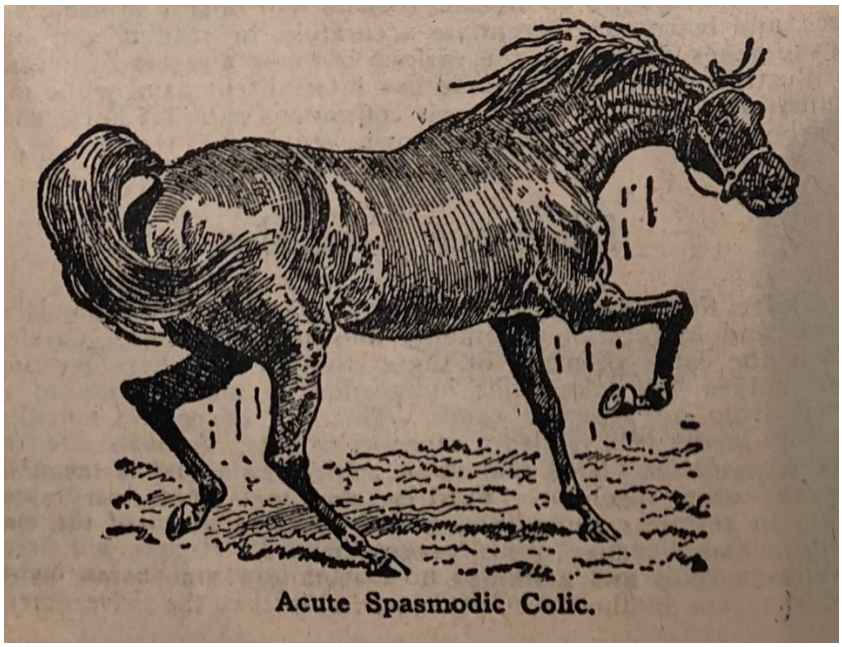
Dr. Bell's [earlier and later editions of his] animal health pamphlets describe what causes colic: "drinking cold water when overheated or colder water than the horse has been accustomed to, change of food, or working hard after eating a heavy meal, etc." He also outlined the symptoms: "profuse sweating," and stretching in a way that resembles the desire "to pass urine," a symptom that "often leads one to think there is kidney trouble." However, he reassured readers that his "dual treatment [took] care of the kidneys [so they are] safe to us[e] the treatment for colic." Dr. Bell warned readers about the extreme suffering a horse may experience, using vivid descriptions to help farmers diagnose the condition. He explained that a horse with acute spasmodic colic may "roll and tumble violently" (Figure 1.5). To help farmers administer his remedy, Dr. Bell first addressed the importance of environmental conditions. He stressed the significance of making the horse "comfortable in a roomy stall with plenty of bedding to prevent injury." After ensuring that the animal could recover in a healthy, safe environment, Dr. Bell advised farmers to give three or four

[196] Similar differences and divisions arose between Andrew Smith and Duncan MacEachern at OVC. Thomas W. Dukes, "On the Middle Road: Queen's University's Foray into Veterinary and Comparative Medicine," *The Canadian Veterinary Journal* 48, no. 9 (2007).
[197] Dukes, "On the Middle Road," 31–34.

doses of his Veterinary Medical Wonder every fifteen to thirty minutes: twenty to thirty drops for horses weighing between nine hundred and twelve hundred pounds, and thirty to forty drops for horses weighing between thirteen hundred and fifteen hundred pounds. He also recommended an additional treatment of a "drench composed of pure raw linseed oil, twenty-six to forty ounces and two tablespoons of turpentine" "if colic persists after one hour of treatment." Dosages varied depending on the size and weight of an animal. In addition to administering his Veterinary Medical Wonder, Dr. Bell instructed farmers to apply his Veterinary Liniment to the horse's abdomen, "or mustard may be used as in inflammation of the bowels," before attesting to the effectiveness of this treatment.[198] However, today, veterinarians refute its efficacy.[199] Dr. Bell's practical instructions illustrate how animal health experts and professional veterinarians in the early twentieth century still emphasized the importance of addressing environmental conditions and ensuring animal safety before seeking medicinal treatment options.

[198] George Bell, "First Aid for Sick Animal, Sixth Edition" (A2012.084, Box 1, Collection of Sydney Jackson, Grey Roots County Archives, Grey County), 6; Bell, "Prevention, Diagnosis, and Treatment of Common Disease of Live Stock," 6.
[199] Lisa Cox, Curator, Barker Veterinary Museum, Ontario Veterinary College, University of Guelph, Ontario.

Figure 1.5: Depiction of a horse suffering from acute spasmodic colic—"one of the most prevalent horse ailments," according to Dr. Bell



Source: Bell, "First Aid for Sick Animal, Sixth Edition," 6; Bell, "Prevention, Diagnosis, and Treatment of Common Disease of Live Stock," 6.

Farmers in the late nineteenth and early twentieth centuries depended greatly on their animals. Being far from veterinary care, they relied heavily on popular animal health manuals, distance education manuals, and correspondence courses, all of which combined veterinary science with experiential knowledge that met readers' demand for veterinary knowledge of the ailments that regularly affected livestock. Offering manuals on a subscription basis throughout North America and worldwide was an important component to facilitating the dissemination of experiential and scientific animal health knowledge in rural environments over long distances.

The transition from informal to formal veterinary training took place over fifty-eight years after the Ontario Veterinary College (OVC) was established in 1862 and forty-six years after the Ontario Veterinary Medical Association was founded in 1874. Over this period, popular animal science manuals grew in popularity, a testament to the use of experiential knowledge and practical

applications of early veterinary science in treating livestock. The manuals encroached on efforts by professional veterinarians to offer the most advanced veterinary medicine available—a case in point is the gradual inclusion of anatomical illustrations and explanations of early veterinary science concepts for routine treatments and preventive care. This evolution reflects how livestock healthcare evolved at the same time that veterinary medicine became more accessible and agricultural methods were modernized in the early twentieth century.

As well, the evolution of livestock healthcare reflects a significant change in the animal–human relationship. In the mid- to late nineteenth century, farmers had a close connection with their livestock and observed animals on a daily basis. However, as herd sizes increased due to the industrialization of livestock farming, the focus shifted from individual animals to managing injuries and diseases affecting entire herds.[200] This also led to a growing reliance on veterinarians, who were increasingly called to farms to provide treatments.

Access to animal health knowledge allowed farmers to combine new ideas and recent advancements in veterinary medicine with their experiential knowledge of animal health and their unique environments to limit animal suffering and raise healthy animals for sustenance and labour. Less experienced farmers turned to these subscription-based sources for a basic understanding of veterinary science, in particular, animal anatomy and internal processes.[201] Although, as Fisher argues, "no single book had any great effect, … the sustained effort to codify and adapt customary knowledge over generations created a new system of knowledge."[202] The popularization of veterinary science allowed it to develop in a manner that was sometimes driven by the needs of its

[200] Ontario's cattle populations began increasing in the late nineteenth century. Veterinarians theorized about the expansion of poultry flock sizes in the early 1920s, before they increased substantially in the mid-twentieth century. See, Introduction, Tables II and III.
[201] Fisher, *The Enclosure of Knowledge*, 275.
[202] Fisher, *The Enclosure of Knowledge*, 264.

audience: stock breeders, farmers, and those on the ground interacting with livestock in rural environments, not solely professional veterinarians.

Despite the obvious rivalry and competition between experiential and scientific knowledge advocates, we see that over this period of great change, livestock health practices advanced, and veterinary science began to gain authority. At the crux of this dynamic relationship, farmers continuously adapted and evolved their approach to treating livestock health challenges. As tensions grew and professional veterinarians gained authority, challenging those who lacked institutional training, distrust and eventually the condemnation of popular animal health publications and correspondence schools took hold. Professional veterinarians' pursuit of authority, curriculum development at institutions, and experiential fieldwork began to replace popular global knowledge exchange networks that had assisted in distributing knowledge of veterinary science to farmers.

Chapter 2: Separate and Distinct: Early Professionalization of Veterinary Medicine in Ontario

Throughout the late nineteenth and early twentieth centuries, the veterinary profession in Ontario aimed to distinguish itself from experiential practitioners who lacked institutional training. During this period, when few veterinarians populated the countryside, farmers and those working with livestock continued to play a crucial role in quickly detecting injuries and reporting disease outbreaks. The scarcity of veterinarians, combined with farmers' initial resistance to top-down knowledge, allowed space for a vast network of experiential practitioners. Competition for authority over veterinary practices prompted institutions to forge connections with the government and farmers. Their goal was to discredit folk medicine and experiential practitioners and ultimately maintain and protect the health of farmers' livestock by applying the latest advancements in veterinary medicine.[1]

Over this period, Canada's rural settler majority and those dependent on healthy livestock sought animal healthcare within a "veterinary marketplace" where there was immense competition between experiential and professional practitioners to produce knowledge and provide cost-effective treatments.[2] It is within this market that animal health practitioners—labelled by professional veterinarians as "ignorant empiricists or dangerous quacks"—were able to gain a foothold by disseminating veterinary knowledge through subscription-based and popular printed publications, as

[1] Throughout this chapter, folk medicine refers to traditional or experiential practices in contrast to scientific practices, unlike Owen Davies' claim that folk medicine included elements of witchcraft. Folk medicine was not always used as a "last resort," but also when traditional and experiential knowledge was valued over top-down, institutional knowledge, especially when professional medical practitioners were inaccessible. Owen Davies, "Cunning-Folk in the Medical Market-Place during the Nineteenth Century," *Medical History* 43, no. 1 (1999): 55–73.

[2] Ruth Sandwell, *Canada's Rural Majority: Households, Environments, and Economies, 1870–1940* (Toronto: University of Toronto Press, 2016), 50. For more on "veterinary marketplace" see, Susan D. Jones and Peter A. Koolmees, *A Concise History of Veterinary Medicine* (Cambridge: Cambridge University Press, 2022), 86; Abigail Woods, "Animals in the history of human and veterinary medicine," in *The Routledge Companion to Animal-Human History*, eds. H. Kean and P. Howell (London: Routledge, 2018), 147–170; Abigail Woods, "Between human and veterinary medicine: the history of animals and surgery," in *The Palgrave Handbook of the History of Surgery* (London: Palgrave Macmillan UK, 2017), 116 and 120.

discussed in the previous chapter.[3] However, with increasing mechanization and industrialization, there was a notable shift from individual animal care to herd health that encouraged veterinarians to specialize.[4]

The veterinary profession focused its efforts in accordance with changes in the animal–human relationship. As the combustion engine replaced horsepower, the status of labour animals in human society slowly diminished. While the industrialization of food production increased flock and herd sizes, horses remained an exception, as the combustion engine eventually replaced many of their functions. Increasingly, animals came to be viewed for their value in food production, human leisure activities, and companionship, and veterinarians had to adapt to these economic changes. The gradual shift in focus from viewing animals as labourers or livestock that supplied milk and meat, to animals as spectacle, or small domestic animals as status symbols and companions, and the expansion of the meat and dairy industries were both the impetus for veterinarians pursuing work in profitable animal health sectors (Table V).[5]

The Ontario Veterinary College (OVC) responded to more than just the interests of farmers. The college also developed curriculum that was responsive to the meatpacking and dairy industries. For some time, certification processes "maintained farmer skill and some level of expertise." However, ironically, these processes also enabled scientific innovation to gain hold, and as historian Kathy J. Cooke argues, they helped to "legitimize the work of scientists to farmers." In the context of seed certification in the United States during the late nineteenth and early twentieth centuries, Cooke contends that certification became a "mechanism for information exchange between farmers

[3] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 86.
[4] For more information on the historical role of animals in cities throughout North America, see Frederick L. Brown, *The City is More Than Human: An Animal History of Seattle* (Seattle & London: University of Washington Press, 2016); Clay McShane and Joel Tarr, *The Horse in the City: Living Machines in the Nineteenth Century* (Baltimore: Johns Hopkins University Press, 2007); Catherine McNeur, *Taming Manhattan: Environmental Battles in the Antebellum City* (Cambridge, Mass: Harvard University Press, 2014).
[5] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 270.

and scientists" and the "development of larger, industrialized farming enterprises."[6] Additionally, the inclusion of training on regulations and the law was a response to the needs of the state. The Ontario and Canadian governments required trained professionals to implement regulations on milk and meat inspection. This also served the interests and needs of consumers of animal products. Consequently, those responsible for developing curricula at veterinary institutions realigned their programs to reconcile these late-nineteenth- and early-twentieth-century social, cultural, and economic changes.

In this chapter, I explore the early foundations of veterinary medicine and the evolution of the profession's relationship with farmers and experiential livestock health practitioners. I examine the development of veterinary science as professional and institutional veterinarians sought new ways to gain authority by responding to calls for their expertise from the state, agricultural industries, and farmers. Furthermore, I investigate the growing distrust and condemnation of popular animal health and distance education manuals by professional veterinarians from the late nineteenth to the early twentieth centuries. I trace OVC's expanding curriculum by comparing students' lecture notes from 1886, 1914, and 1934. These comparisons highlight how lectures and coursework evolved as part of the efforts by state and institutional veterinarians to attract students to veterinary schools and ultimately increase both the authority and the number of professional veterinarians. Then, I examine how OVC's systematic establishment of specialized field courses helped satisfy demands for experiential knowledge, which further bolstered the authority of professional veterinarians. In this context, I also examine the influence of the Pure Milk movement and the First World War on the establishment of veterinary authority and the development of the veterinary profession. Combined, these developments enhance our understanding of how the profession addressed evolving livestock

[6] Kathy J. Cooke, "Expertise, Book Farming, and Government Agriculture: The Origins of Agricultural Seed Certification in the United States," *Agricultural History* 76, no. 3 (July 2002): 527.

health challenges associated with the growth of industrial farming and changes to the animal–human relationship. The expansion in the number of livestock and their value motivated veterinarians to adapt to the growth of farming industries (Tables II, III, and IV). These strategies equipped OVC to meet both the demands of farmers and local veterinarians, while also raising the standards of veterinary medicine. Tracking the professionalization of veterinary medicine over the late nineteenth and early twentieth centuries provides valuable insights into how the field became increasingly specialized. This specialization primarily resulted from the efforts of OVC to tackle livestock health problems that jeopardized farmers' livelihoods and nation-building initiatives.

As we saw in Chapter 1, the practice of animal healthcare was not solely the domain of veterinarians. Farmers understood their animals and environments, and were able to decide how and from whom to seek animal healthcare. Depending on their circumstances, they could call on an experiential or empirical practitioner (such as a farrier, blacksmith, neighbouring farmer, or livestock breeder), pay for a veterinarian visit, or turn to popular manuals or pamphlets for information on proven methods or new products. However, few farmers initially valued "book learning." Instead, they trusted experience.[7] Historian James Fisher argues that earlier, in the late eighteenth century, farmers' opinions about book farming differed. Some farmers questioned or disapproved of top-down texts that were overly speculative or theoretical in nature. In contrast, some agricultural writers sought to distinguish themselves from their competitors by promoting their combination of experience and scientific expertise in the preface of each edition.[8] Other farmers had stronger critiques; Fisher argues that these beliefs were the product of a "fundamental suspicion of learning about farming from books and even challenging its social effects."[9] However, in late nineteenth and

[7] Cooke, "Expertise, Book Farming, and Government Agriculture: The Origins of Agricultural Seed Certification in the United States," 527.
[8] Fisher, "The Master Should Know More," 315–16.
[9] Fisher, "The Master Should Know More," 316.

early twentieth-century southern Ontario, animal health manuals offered people living in rural communities a means to overcome the challenges posed by Canada's vast geography.

Like historians Susan Jones and Peter A. Koolmees, I acknowledge that institutionalization did not immediately revolutionize animal healthcare practices. Though eighteenth- and nineteenth-century institutions in Europe represent a significant step in developing veterinary education, their curriculum was "not quite scientific (from today's point of view)." I explore this further in Chapter 3's analysis of experiential and institutional instructions for pharmaceutical treatments.[10] Rural and urban people in Canada also prioritized formal and informal knowledge differently depending on their access to institutional veterinary training, the costs associated with it, their proximity to urban institutions, and the level of expert or experiential knowledge available in their communities.

From 1862, with the establishment of a course on veterinary medicine at the University of Toronto, the number of veterinarians in Ontario slowly increased, with few notable setbacks. Figure I shows that 189 veterinarians practised in Ontario in 1871.[11] Out of the four provinces reported in this census (New Brunswick, Nova Scotia, Ontario, and Quebec), most veterinarians were concentrated in Ontario (77 percent).[12] The number of veterinarians practising in Ontario rose to 275 (or 89 percent of veterinarians practising in Canada) in 1881 and to 604 (71 percent) in 1891.[13] However, as OVC's program expanded and entrance qualifications became more rigid, the number of incoming students, and consequently graduates, decreased.[14] In 1911, the number of practising

[10] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 86.
[11] Statistics Canada. Census of Canada, 1870–71, vol. 2, Ottawa, Ont., 1873, 289. Available from Canadiana Online: https://www.canadiana.ca/view/oocihm.9_08057/300.
[12] Statistics Canada. Census of Canada, 1870–71, 337.
[13] Statistics Canada. Census of Canada, 1880–81, vol. 2, Ottawa, Ont., 1884, 308. Available from Canadiana Online: https://www.canadiana.ca/view/oocihm.9_08062/320; Statistics Canada. Fifth Census of Canada, 1911, vol. 6, Ottawa, Ont., 1915, 8. Available from Statistics Canada Online: https://publications.gc.ca/collections/collection_2016/statcan/CS98-1911-6.pdf; Statistics Canada. Census of Canada, 1890–91, vol. 2, Ottawa, Ont., 1893, 167 and 190. Available from Statistics Canada Online: https://publications.gc.ca/collections/collection_2016/statcan/CS98-1891-2.pdf.
[14] Lisa Cox, Curator, Barker Veterinary Museum, Ontario Veterinary College, University of Guelph, Ontario.

veterinarians in Ontario had decreased to 580 (50 percent), and once again increased following the First World War in 1921.[15] By 1911, the concentration of veterinarians had also shifted from Ontario's largest urban centres. Toronto recorded the highest number of veterinarians (forty-six) and London the second highest (twelve), compared to only three veterinarians each in Berlin (Kitchener), Kingston, and Peterborough, five in Guelph, six in Hamilton, and nine in Ottawa.[16] In 1931, there were 467 veterinarians in Ontario and 1,046 in Canada and "its provinces" or 848 in Canada alone.[17] Though Toronto was still home to most veterinarians of any city in Ontario with fifty-one, qualified veterinarians had started to disperse further across the province: twenty-four in Ottawa, nine in London, six in Guelph, five in Brantford and Kingston, four in Peterborough and Windsor, three in Kitchener, Sarnia, and St. Catharines, two each in Stratford and Sudbury, and one each in Niagara Falls, North Bay, and Sault Ste. Marie.[18] At this time, a total of 127 veterinarians were recorded in Ontario's cities, with 72 percent practising outside Ontario's major centres.[19]

Though urbanization led to a reduced number of veterinarians practising large animal medicine in cities, many urban veterinarians began practising small animal medicine. Monumental changes to the veterinary profession—the result of diversification and modernization in response to the industrialization of animal agriculture and the growth of small animal practices—were marked by the *Veterinary Acts* of 1879, 1920, 1931, and 1933, which slowly established more authority for veterinary professionals.

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[15] Statistics Canada. Fifth Census of Canada, 1911, 178–179, and 9; Statistics Canada. Sixth Census of Canada, 1921, vol. 4—Occupations, Ottawa, Ont., 1929, 178–179, and 9. Available from Internet Archive Online: https://dn790000.ca.archive.org/0/items/1921981921FV41929engfra/1921981921FV41929engfra.pdf.
[16] Statistics Canada. Fifth Census of Canada, 1911, 72, 340, 460, 394, 410, 466, 314, and 302.
[17] Statistics Canada. Seventh Census of Canada, 1931, vol. 7—Occupations and Industries, Ottawa, Ont., 1936, 132, 72 and 876. Available from Internet Archive Online: https://dn790007.ca.archive.org/0/items/1931981931FV71936engfra/1931981931FV71936engfra.pdf.
[18] Statistics Canada. Sixth Census of Canada, 1931, 236, 212, 286, 275, 274, 296, 309, 297, and 308.
[19] The 1931 Census also listed more cities in Ontario: sixteen compared to ten in 1921.

Despite the overall increase of veterinarians in Canada, Ontario's numbers were fairly steady at the turn of the twentieth century. However, the precise number of practitioners is difficult to determine, due to both discrepancies between enumerators and the use of the term "veterinarian" by those without institutional training.[20] Earlier Acts regulated who could use the term "veterinary surgeon." However, enforcement was poor, and farriers and veterinarians were listed together in census data until 1891, when veterinarians were first categorized as professionals.[21] The number of graduates from the Ontario Veterinary College (OVC) increased in the late nineteenth century before a slow drop and slight increase through the early twentieth century as shown in Figure 2.2. In their history of the veterinary profession, C. A. V. Barker and Margaret Evans argue that "the ratio of unqualified to qualified veterinarians had changed greatly in favour of the professional men."[22] However, "only a small proportion" of graduates took up membership with professional associations in the late nineteenth century, with "less than half of them belong[ing] to the [Ontario Veterinary Association] at the beginning of the 1880's."[23]

Following Dr. Duncan McEachran's 1866 departure from Toronto to set up the Montréal Veterinary College, the Ontario Veterinary College (OVC) competed with other schools to attract graduates. Dr. George Bell in Kingston was also accused of writing letters to recruit students from OVC to a short-lived veterinary school at Queen's University in Kingston, Ontario.[24] And many graduates returned home to the United States or to other parts of Canada (including Western Canada), to set up private practices. Throughout this period, professional and institutional veterinary

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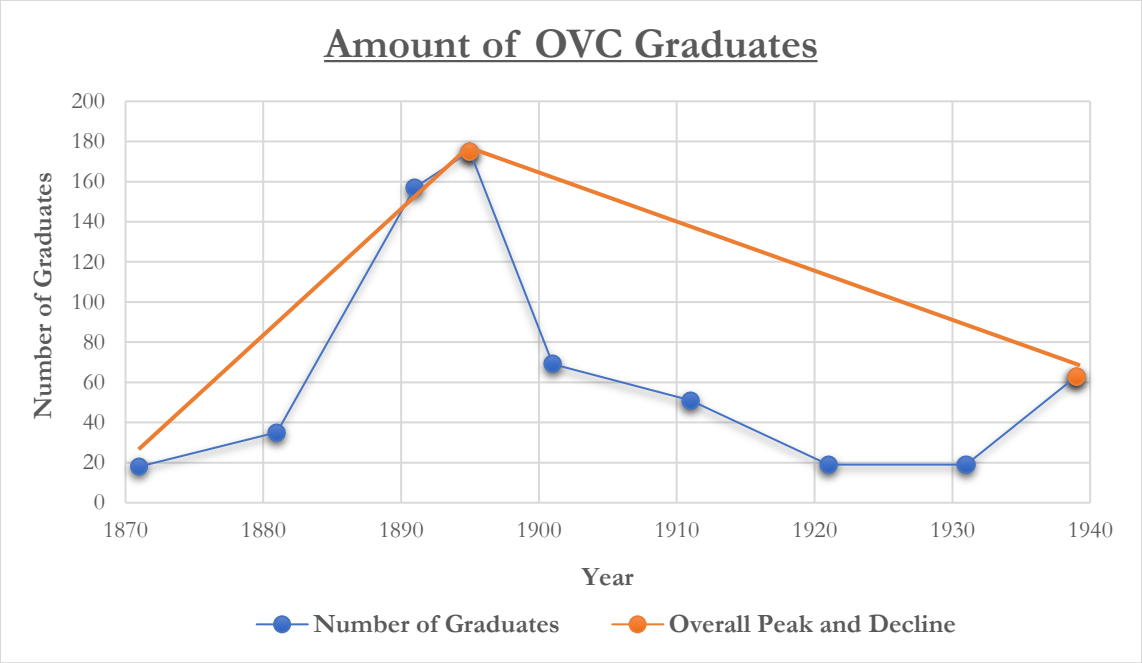
[20] Bruce Curtis, *The Politics of Population: State Formation, Statistics, and the Census of Canada* (Toronto, Buffalo, London: University of Toronto Press, 2001).
[21] Statistics Canada. Census of Canada, 1890–91, vol. 2, Ottawa, Ont., 1884, 167; C. A.V. Barker and Margaret Evans, *Century One: A History of the Ontario Veterinary Association, 1874–1974* (Guelph: Distributed by the authors, 1976), 50.
[22] Barker and Evans, *Century One*, 48 and 50.
[23] Barker and Evans, *Century One*, 48.
[24] Anonymous. "Minute book, School of Mining and Agriculture Board Meeting," November 10, 1896. Queen's University Archives, as found in Dukes, "On the Middle Road: Queen's University's Foray into Veterinary and Comparative Medicine," 950.

organizations sought to increase the number of graduates and those who held professional memberships in an effort to solidify their authority to practice veterinary medicine across Ontario. During periods of stagnation or decreased enrolment, these efforts amplified.

Table 2.1: Number of graduates in census years and the overall peak and decline from 1871 to 1939



Source: Lisa Cox, Curator, Barker Veterinary Museum, Ontario Veterinary College, University of Guelph, Ontario. Lisa shared enrolment and graduate numbers from OVC from 1871 to 1939.

Throughout the late nineteenth and early twentieth centuries, professional veterinary institutions and organizations developed strategies to consolidate the professional standing of veterinary practice while marginalizing folk medicine and other competitors (including producers of popular animal health manuals). One strategy involved OVC's move from Toronto to Guelph in 1922, a place where "urban and suburban advantages prevailed, thus assisting in developing the college spirit to a higher extent than would be possible in the centre of a larger metropolitan city."[25]

[25] C. D. McGilvray, "Report of the Ontario Veterinary College, 1926," Toronto: The Ontario Department of Agriculture, 1927, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 4.

This move meant that the college could implement more hands-on, field learning activities that would meet the practical needs of livestock owners, further cutting into the market that folk and experiential practitioners had previously served. Consequently, the professionalization of veterinary medicine was shaped itself by the hands-on, practical approaches previously associated with so-called "quack medicine."[26]

The professionalization of veterinary medicine did not occur overnight; it was a slow, uneven process that took decades to develop in Canada. Veterinary schools can be traced back to ancient medical traditions in China and India, long before the European Enlightenment period. Competition among veterinary knowledge producers and the belief that "professional animal healers would support the military, colonial, and agricultural goals of national governments and empires" inspired nations to establish their own veterinary institutions.[27] Western institutions flourished because they adapted to address vital social, political, and cultural demands as a result of industrialization and global imperialism.[28]

While similar motivations emerged in Canada, particularly following the immigration of British-trained veterinarians, the transition to professionalized veterinary medicine was influenced more by the long distances involved in Canada's emerging settlement patterns, where the majority of farmers lived far from those educated at formal veterinary institutions in urban centres. These twin challenges prompted experimentation and new approaches to veterinary care., especially evident in southern Ontario, where the first Canadian veterinary institution competed with the London (Ontario) Veterinary Correspondence and other popular publications for farmers' business.

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[26] The term "quack medicine" was used by professional veterinarians at the time and historians of professional medicine to condemn folk or experiential knowledge-based practices. Quack medicine and its definition are discussed further in Chapter Four.
[27] As Jones and Koolmees have shown in *A Concise History of Veterinary Medicine*, 86.
[28] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 87.

The first veterinary instruction in the West began at the Royal Veterinary School in Lyon, France, in 1761, followed by the establishment of the Royal Veterinary College in London, England, in 1791. William Dick, the son of a renowned farrier in Scotland, played a significant role in advancing veterinary education in North America. He studied at the University of Edinburgh before the London Veterinary College (UK) granted him a diploma in three months. In 1823, he founded the first veterinary school in Edinburgh.[29] Dick was recognized for his expertise in animal health and science, "extraordinary clinical skill," and "talent as an educator." He created innovative teaching spaces and trained seven students who would later establish their own schools around the world. Three of these students immigrated to North America: Andrew Smith, who began lectures in Toronto, Ontario, in 1862; Duncan McEachran, who worked with Smith before a disagreement over teaching methods led to him founding the Montréal Veterinary School in 1866; and James Law, who went on to study in France, instruct in Edinburgh and London, and establish a practice in Belfast, Ireland, before founding the first veterinary program at Cornell University in 1868.[30] William Williams, a "star student" of Dick's, established the New Veterinary College in Edinburgh, Scotland, in 1873. He claimed that Dick's students authored all but one veterinary textbook published from 1855 to 1875, further highlighting the global influence that Dick's work had on the development of veterinary medicine and dissemination of veterinary science knowledge. Dick's influence was particularly evident in Canada during a period of increased immigration and settlement, and the rise of industrial animal agriculture.[31]

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[29] Alastair A. Macdonald and Colin M. Warwick, *The History of Veterinary Education in Edinburgh* (Edinburgh: Edinburgh University Press, 2023), 22–27; Norman F. Cheville, *Pioneer Scientists and the Great Animal Plagues* (Purdue University Press, 2021), 15.
[30] Macdonald and Warwick, *The History of Veterinary Education in Edinburgh*, 22–44; Cheville, *Pioneer Scientists and the Great Animal Plagues*, 15 and 76; Denis Goulet and Frédéric Jean, "McEachran, Duncan McNab," *Dictionary of Canadian Biography*, 15 (2005); A. M. Evans, "Smith, Andrew," *Dictionary of Canadian Biography*, 13 (1994).
[31] Macdonald and Warwick, *The History of Veterinary Education in Edinburgh*, 72 and 80.

Canada's institutionalization of veterinary medicine began at what would become OVC in Toronto in 1862. A provincial amendment to the *Agriculture and Arts Act* in 1871 restricted who could use the title of "veterinary surgeon" to those who held a certificate from a recognized institution.[32] Two years later the Act was updated once again to impose a fine of twenty-five to one hundred dollars paid to the Ontario Veterinary Association (OVA) on those incorrectly using the title.[33] However, the Act was amended in 1911 to repeal the collection of fines by OVA.[34] This repeal slowed the movement to transform how rural people practised animal health care or accessed knowledge of veterinary science, as well as veterinarians' pursuit of increased authority. Both the provincial government and individual farmers claimed at the time that veterinarians did little to meet evolving animal health needs.

In 1891, OVA held discussions about "bogus certificates of practice" and condemned professional veterinarians who "associated themselves in business with empirics." By 1893, OVA also criticized those styled as veterinary dentists and the granting of veterinary dentist diplomas by the Toronto Veterinary Dental School Limited.[35] Veterinary associations were defending the profession from all angles, Barker and Evans argue, even from human doctors who were called to diagnose animal diseases.[36] OVA also became concerned that as farmers learned about livestock health and contagious diseases, they would take on more treatments themselves.[37] In this context, professional veterinarian associations and veterinary institutions focused on establishing their authority, while also attracting more people to the profession. For example, the Ontario Veterinary College balanced entrance requirements with the need to attract students, while working alongside

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[32] Government of Ontario. *An Amendment to the Agriculture and Arts Acts*, CAP. XXIII, 1871, 70, reprinted in Barker and Evans, *Century* One, 413.
[33] Barker and Evans, *Century One*, 9.
[34] Government of Ontario, *An Act respecting Veterinary Surgeons*, Chapter 45, March 24, 1911, 402, reprinted in Barker and Evans, *Century* One, 430; Barker and Evans, *Century One*, 101.
[35] Barker and Evans, *Century One*, 53.
[36] Barker and Evans, *Century One*, 54.
[37] Barker and Evans, *Century One*, 55.

the provincial government and the Ontario Veterinary Association to develop a curriculum that met farmers' needs.

The provincial government worked to ensure that farmers and courts seeking expert testimony to settle disputes over, for example, animal trespassing, the spread of disease, or malpractice were able to distinguish between experiential practitioners and professionals who had undergone institutional training. In the late nineteenth century, motivations were not to discredit experiential knowledge, but to identify the difference. At the time, given the value that farmers placed on experiential knowledge and accessibility (in both cost and proximity), this led some farmers to prefer experiential practitioners over professional veterinarians.[38] Therefore, professional veterinary organizations, including OVA and others across Canada and the United States, began to organize efforts to license accredited veterinarians and disseminate information about the "benefits and safety of new science" in the second half of the nineteenth century.[39] By the early twentieth century, OVA had become "increasingly aware of its inferior legal position in Ontario in comparison with that in Manitoba and other provinces."[40] Consequently, the association strove for standardization and protections similar to those granted to licensed human medical doctors, despite mounting criticisms of OVC's educational standards.

Under the "direction of the Minister of Agriculture," the *Veterinary College Act* of 1911 consolidated the operations of OVC and helped to legitimize the "rights and standings of graduates" by issuing diplomas and granting them the "title, degree, and standing of Veterinary Surgeon."[41] However, issues related to repealed fines for practising without proper designation continued. In

[38] Barker and Evans, *Century One*, 9–10.
[39] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 104.
[40] Barker and Evans, *Century One*, 79.
[41] Government of Ontario, *An Act Respecting Veterinary Surgeons*, 1911; E. A. A. Grange, "Report of the Ontario Veterinary College, 1911," Toronto: The Ontario Department of Agriculture, 1912, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 22–23.

1913, a significant problem arose after the Government of Ontario overlooked OVA president William Cowan's appeals to include a statement that "no person for hope or gain or reward should be allowed to practice, unless possessing the necessary qualifications." In response, the Central Canada Veterinary Association wrote to the Canadian Minister of Agriculture expressing concerns about the "undesirability" of supporting OVC due to its ties with a "provincial legislature that does not protect graduates from unqualified empirical practitioners."[42] Despite the efforts of professional veterinary associations, their members, and those at OVC to persuade the provincial legislature to condemn the work of experiential practitioners, the Province remained reluctant to do so.

Leading up to and following the end of the First World War, OVC's annual reports to the Minister of Agriculture indicate that college administrators sought to demonstrate the value of institutional veterinary training and how they were attempting to meet society's growing demands for animal health knowledge and to advance veterinary science. According to Barker and Evans, in 1915, the Government of Ontario clearly exhibited its indifference toward veterinary professionals when it did not "seem to know that the [OVA] had been an incorporated body since 1879."[43] Furthermore, in 1916, the Minister of Agriculture confidently proclaimed that "veterinary quacks" did not exist in Ontario despite OVA's condemnation of those who submitted credentials from the London Veterinary Correspondence School.[44] After years of advocating for the standardization of veterinary practices and regulating who could legally provide veterinary services to communities in Ontario, the veterinary profession was finally able to see its efforts realized with the introduction of the *Veterinary Science Practice Act* in 1920.[45]

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[42] Barker and Evans, *Century One*, 101.
[43] Government of Ontario, *An Act to incorporate The Ontario Veterinary Association*, 1879, Chapter 80, 270–273, as reprinted in Barker and Evans, 414–417.
[44] Barker and Evans, *Century One*, 79.
[45] Government of Ontario. *An Act Respecting the Practice of Veterinary Science*, 1920, Chapter 51, 251–252, as reprinted in Barker and Evans, *Century One*, 433–434.

Disputes over standards and adequate certification lasted into the early twentieth century. By 1918, several provinces, including British Columbia, Alberta, Saskatchewan, Manitoba, Quebec, and Nova Scotia, required professional veterinarians to register with provincial veterinary associations and fines payable to OVA were reinstituted in Ontario.[46] However, few regulations existed in Ontario. While practising lawyers, medical doctors, and dentists were mandated to register and obtain licences from professional organizations in Ontario, veterinary medicine was not held to this standard of practice until the *Veterinary Science Practice Act* was implemented in 1920.[47] Prior to this, the "antiquated" law, which had undergone many revisions, allowed individuals to continue practicing veterinary medicine unless it could be proven in court that the "accused [had] actually paid for the printing of stationary using the title "veterinary surgeon."[48] Barker and Evans argue that before 1920, it was "impossible ... to prosecute [London Veterinary Correspondence School] 'graduates' as long as they did not use the title of veterinary surgeon."[49] Ontario courts were generally reluctant to impose fines on those offering veterinary services, preferring instead to stop inaccurate advertisements.[50] The popularity and necessity of experiential veterinary services persisted

[46] "Veterinarians in Ontario," *The Farmer's Advocate and Home Magazine* LIII no. 1342 (June 13, 1918), 1003; Government of Ontario *Statutes of Ontario*, 1918, Chapter 20, Section 27, reprinted in Barker and Evans, *Century One*, 432; Barker and Evans, *Century One*, 108–109.
[47] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1920.
[48] E. A. A. Grange, "An Act Respecting Veterinary Surgeons," in "Report of the Ontario Veterinary College, 1910," Toronto: The Ontario Department of Agriculture, 1911, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 15–16; E. A. A. Grange, "An Act Respecting Veterinary Surgeons," in "Report of the Ontario Veterinary College, 1912," Toronto: The Ontario Department of Agriculture, 1913, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 24; E. A. A. Grange, "An Act Respecting Veterinary Surgeons. Chapter 171, R.S.O. 1914," in "Report of the Ontario Veterinary College, 1913," Toronto: The Ontario Department of Agriculture, 1914, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 39; E. A. A. Grange, "An Act Respecting Veterinary Surgeons," in "Report of the Ontario Veterinary College, 1915," Toronto: The Ontario Department of Agriculture, 1916, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 31; "Veterinarians in Ontario," *The Farmer's Advocate and Home Magazine,* 1003.
[49] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1920; Barker and Evans, *Century One,* 97.
[50] Barker and Evans, *Century One,* 97.

until veterinary training became more accessible in rural communities and the profession started to recognize the value of integrating experiential knowledge into the institutional curriculum.

Appeals to the Government of Ontario to resolve issues with accreditation and close the globally popular London Veterinary Correspondence School persisted until students from OVC successfully petitioned Premier Drury's provincial government and the new United Farmers of Ontario to standardize veterinary training.[51] Their efforts culminated in the passing of the *Veterinary Science Practice Act* after nearly fifty years of competition for certification between experiential and professional practitioners.

But even after the new Act took effect, disputes continued between OVA and the provincial government over licensing those without formal institutional training. A clause in the Act indicated that "non-graduates who had been practicing in Ontario for a number of years [could] continue as before but not to give them the title of Veterinary Surgeon or the privileges accompanying a college degree."[52] This made the licensing of those with informal training a contentious issue. The Minister of Agriculture stressed the importance of "avoiding injustice to [those] who for five years or more had gained a livelihood from some form of veterinary practice." Instead, they aimed to restrict accreditation moving forward to those with formal institutional training.[53] Consequently, many advertised their services as veterinary dentists instead (Figures 2.2 and 2.3).[54] Local veterinary dentists often advertised their examination services, highlighting their role in ensuring an animal's health. They often claimed their ability to examine livestock, detect contagious diseases, and perform

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[51] Historian Charles M. Johnston contends that during the war, Drury was busy with farm labour and political work, however, he fit in time to read "his colleagues' writings, particularly [W. C.] Good's contributions to *The Farmer's Advocate*." Charles M. Johnston, *E. C. Drury: Agrarian Idealist* (Toronto: University of Toronto Press for The Ontario Historical Studies Series, 1986), 44 and 52.
[52] Barker and Evans, *Century One,* 113.
[53] Barker and Evans, *Century One,* 113.
[54] Many promotional documents found in rural county archives advertise the services of a 'veterinary dentist' instead of a 'veterinarian or veterinary surgeon.' O. P. A. Ferguson Papers, Agriculture Department, 1926. As found in Barker and Evans, *Century One,* 132.

dental maintenance that would help digestive health and behavioural habits. Additionally, as shown in Figures 2.1 and 2.2, many advertisements emphasized that potential clients could contact over 5,000 references who valued the services provided by a veterinary dentist—theoretically offering reassurance about the quality of care experienced by livestock owners. Disagreements over standards and veterinary methods persisted throughout the early twentieth century until institutional standards and veterinarians became widespread and their services easily accessible.

Figure 2.1: Advertisement for a local veterinary dentist in *The Ingersoll Chronicle and Canadian Dairyman*


J. H. SMITH

Veterinary Dentist

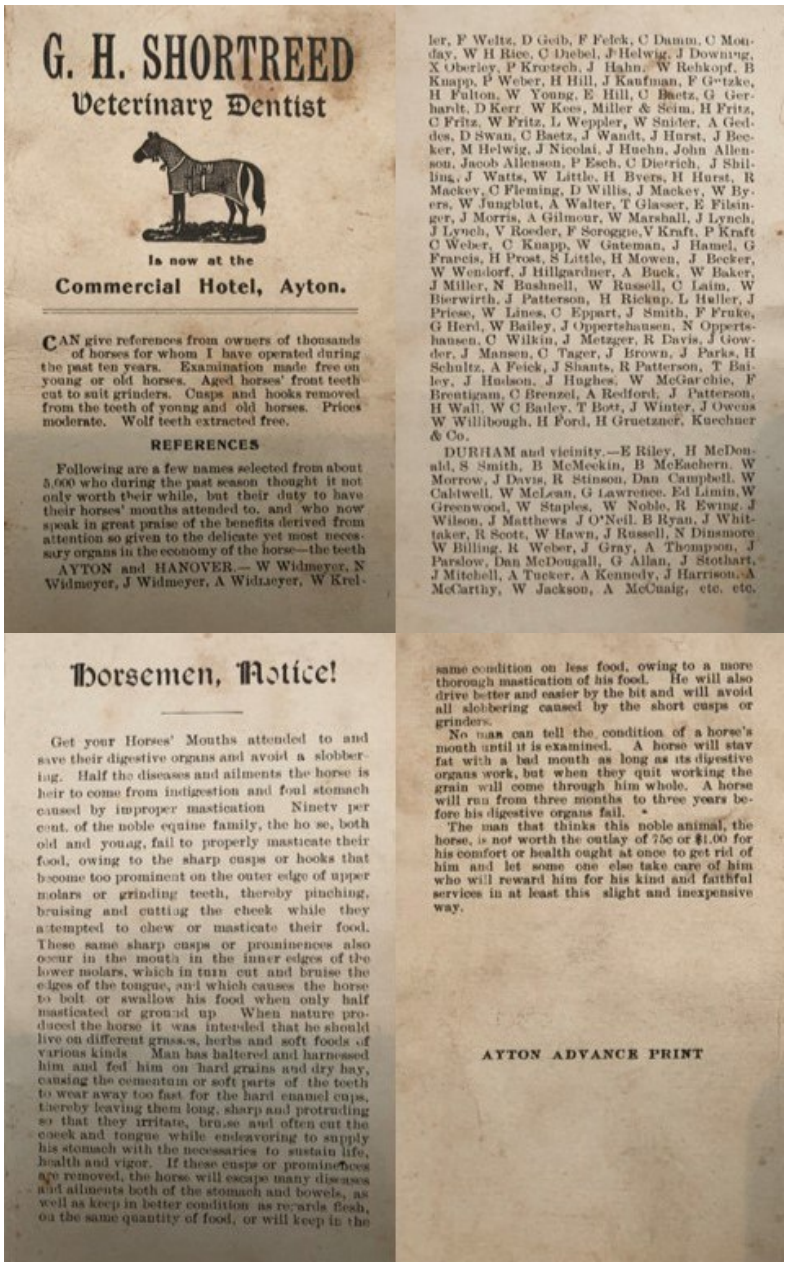
Is now at the Kirwin House, Ingersoll.

Postal Card will bring me to your place without extra charge.

Examinations made free on young and old horses. Get your horses mouths attended to and save their digestive organs and avoid all slobbering. The cause of numerous diseases and disagreeable habits have been traced directly to the teeth. Blindness, drolling, stopping suddenly, frothing, loss of flesh, weak eyes, drawing on one rein, and pulling are very often due to diseased and irregular teeth. Can give reference from owners of over 5000 horses operated upon during the last two season.

Source: "J. H. Smith Veterinary Dentist," Advertisement in *The Ingersoll Chronicle and Canadian Dairyman* 49, no. 42 (Thursday, April 11, 1901): 6.

Figure 2.2: Advertising pamphlet for a veterinary dentist in Ayton, Ontario



G. H. SHORTREED

Veterinary Dentist

Is now at the

Commercial Hotel, Ayton.

CAN give references from owners of thousands of horses for whom I have operated during the past ten years. Examination made free on young or old horses. Aged horses' front teeth cut to suit grinders. Cusps and hooks removed from the teeth of young and old horses. Prices moderate. Wolf teeth extracted free.

REFERENCES

Following are a few names selected from about 5,000 who during the past season thought it not only worth their while, but their duty to have their horses' mouths attended to, and who now speak in great praise of the benefits derived from attention so given to the delicate yet most necessary organs in the economy of the horse—the teeth

AYTON and HANOVER.—W Widmeyer, N Widmeyer, J Widmeyer, A Widmeyer, W Krel-

ler, F Weltz, D Geib, F Felck, C Damm, C Monday, W H Rice, C Diebel, J Helwig, J Downing, X Oberley, P Krotzch, J Hahn, W Rehkopf, B Knapp, P Weber, H Hill, J Kaufman, F Gretzke, H Fulton, W Young, E Hill, C Baetz, G Gerhardt, D Kerr W Kees, Miller & Seim, H Fritz, C Fritz, W Fritz, L Weppler, W Snider, A Geddes, D Swan, C Baetz, J Wandt, J Hurst, J Becker, M Helwig, J Nicolai, J Huehn, John Allenson, Jacob Allenson, P Esch, C Dietrich, J Shilling, J Watts, W Little, H Byers, H Hurst, R Mackey, C Fleming, D Willis, J Mackey, W Byers, W Jungblut, A Walter, T Glasser, E Filsinger, J Morris, A Gilmour, W Marshall, J Lynch, J Lynch, V Roeder, F Scroggie, V Kraft, P Kraft C Weber, C Knapp, W Gateman, J Hamel, G Francis, H Prost, S Little, H Mowen, J Becker, W Wendorf, J Hillgardner, A Buck, W Baker, J Miller, N Bushnell, W Russell, C Laim, W Bierwirth, J Patterson, H Rieknp, L Huller, J Priese, W Lines, C Eppart, J Smith, F Fruke, G Herd, W Bailey, J Oppertshausen, N Oppertshausen, C Wilkin, J Metzger, R Davis, J Gowder, J Mansen, C Tager, J Brown, J Parks, H Schultz, A Feick, J Shants, R Patterson, T Bailey, J Hudson, J Hughes, W McGarchie, P Brentigam, C Brenzel, A Redford, J Patterson, H Wall, W C Bailey, T Bott, J Winter, J Owens W Willibough, H Ford, H Gruetzner, Kuechner & Co.

DURHAM and vicinity.—E Riley, H McDonald, S Smith, B McMeekin, B McEachern, W Morrow, J Davis, R Stinson, Dan Campbell, W Caldwell, W McLean, G Lawrence, Ed Limin, W Greenwood, W Staples, W Noble, R Ewing, J Wilson, J Matthews J O'Neil, B Ryan, J Whittaker, R Scott, W Hawn, J Russell, N Dinsmore W Billing, R Weber, J Gray, A Thompson, J Parslow, Dan McDougall, G Allan, J Stothart, J Mitchell, A Tucker, A Kennedy, J Harrison, A McCarthy, W Jackson, A McCuaig, etc. etc.

Horsemen, Notice!

Get your Horses' Mouths attended to and save their digestive organs and avoid a slobbering. Half the diseases and ailments the horse is heir to come from indigestion and foul stomach caused by improper mastication Ninety per cent. of the noble equine family, the horse, both old and young, fail to properly masticate their food, owing to the sharp cusps or hooks that become too prominent on the outer edge of upper molars or grinding teeth, thereby pinching, bruising and cutting the cheek while they attempted to chew or masticate their food. These same sharp cusps or prominences also occur in the mouth in the inner edges of the lower molars, which in turn cut and bruise the edges of the tongue, and which causes the horse to bolt or swallow his food when only half masticated or ground up When nature produced the horse it was intended that he should live on different grasses, herbs and soft foods of various kinds Man has haltered and harnessed him and fed him on hard grains and dry hay, causing the cementum or soft parts of the teeth to wear away too fast for the hard enamel cups, thereby leaving them long, sharp and protruding so that they irritate, bruise and often cut the cheek and tongue while endeavoring to supply his stomach with the necessaries to sustain life, health and vigor. If these cusps or prominences are removed, the horse will escape many diseases and ailments both of the stomach and bowels, as well as keep in better condition as regards flesh, on the same quantity of food, or will keep in the same condition on less food, owing to a more thorough mastication of his food. He will also drive better and easier by the bit and will avoid all slobbering caused by the short cusps or grinders.

No man can tell the condition of a horse's mouth until it is examined. A horse will stay fat with a bad mouth as long as its digestive organs work, but when they quit working the grain will come through him whole. A horse will run from three months to three years before his digestive organs fail.

The man that thinks this noble animal, the horse, is not worth the outlay of 75c or $1.00 for his comfort or health ought at once to get rid of him and let some one else take care of him who will reward him for his kind and faithful services in at least this slight and inexpensive way.

AYTON ADVANCE PRINT

Source: "G.H. Shortreed Veterinary Dentist" (A2013.032 PF461S1F1I1, Grey Roots County Archives, Grey County, after 1896).

In the early twentieth century, Ontario experienced a significant shift in the practice of veterinary medicine in rural farming environments. In addition to producing and disseminating knowledge of veterinary science, the profession reacted to legislation and responded to concerns. Farmers relied on experiential knowledge and local practitioners to care for their animals in the

nineteenth century. However, as mechanization and specialized industrial farming gained momentum, farming practices evolved rapidly, leading farmers to manage the health of larger groups of animals in new ways. With the growth in herd and flock sizes, farmers faced more challenges in observing changes in their individual animals and administering treatments promptly (Tables II, III, IV, V).[55]

In response to concerns about inadequate livestock management at the end of the nineteenth and early twentieth centuries, veterinary associations began advocating for the legal standardization of veterinary medicine. At the same time, the OVC adapted its programs to better meet the evolving needs of farmers, veterinarians in private practice, and government officials throughout Ontario. Institutional veterinarians aimed to advance veterinary science in a way that supported livestock health while also enforcing public health regulations. For example, new training concentrated on breeding practices, legal responsibilities, and the various roles that veterinarians played, including serving as expert witnesses in civil disputes, advocates for animal welfare, disease inspectors, and custodians of healthy environments. As the institutional curriculum evolved to tackle livestock health challenges as they emerged and veterinary services became more accessible across Ontario, the demand for specialized veterinary expertise and experienced professionals grew.

Curriculum Development and the Evolution of Coursework at OVC

The ability of the Ontario Veterinary College (OVC) to adapt its curriculum to serve the livestock health needs of farmers and local veterinarians served to elevate the status of veterinarians, who had struggled for recognition and increased authority, and led to additional legal regulations and the standardization of veterinary medicine in Ontario. OVC's connection to both the government and

[55] See Margaret Derry, *Art and Science in Breeding Chickens: Creating Better Chickens* (Toronto: University of Toronto Press, 2012), 172–173.

the University of Toronto helped cement its scientific authority, which in turn delivered on farmers' demands for better livestock health practices. American historian Norman F. Cheville credits OVC with creating a model for "formal, science-based veterinary education." The college's connection to the animal agriculture industry and government support under "the umbrella" of university education allowed it to better meet demands and over time, transformed livestock health in the province.[56] Despite this approach, OVC still received criticism from Duncan McEachran, a classmate of Andrew Smith in Edinburgh and founder of the Montréal Veterinary School (established 1866), and Alexandre Liautard, a French-trained veterinarian who founded two schools for veterinary instruction in New York (beginning in 1864).[57] McEachran and Liautard fuelled each other's public criticism of OVC and its affiliates. They argued that OVC had degraded formal institutional instruction by employing teachers without the highest degree offered at a veterinary institution and had contributed to a decline in respect for the profession. Their criticisms were similar to those expressed by OVC graduates towards the London Veterinary Correspondence School. McEachran and Liautard believed that OVC had a "greater number of applicants and granted more diplomas to students because it had "lax standards and little science and taught only practical clinical work."[58] However, Cheville notes that McEachran and Liautard's accusations were "mean-spirited" and based on jealous rivalry between the institutions.[59]

The curriculum for Smith's early lectures—part of the Ontario's Agricultural College's (OAC) Veterinary Department and what eventually became OVC—changed over time to meet the demands of farmers and the province to limit the spread of disease.

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[56] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 66.
[57] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 60.
[58] "The Veterinary Department of the University of Iowa and Its Critics," *American Veterinary Review* 3 (1880): 408; Cheville, *Pioneer Scientists and the Great Animal Plagues*, 64–65.
[59] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 64–65.

In Ontario in the late nineteenth and early twentieth centuries, veterinary professors taught a core curriculum based on animal anatomy, evolving approaches to Materia Medica or veterinary pharmacology, contagious diseases, surgery, and livestock health that would aid students following graduation.[60] Professors would also sometimes travel to give public health lectures to farmers. However, between the late nineteenth century and the Second World War, Canada underwent profound social, cultural, and economic changes that led to an expansion of industrial farming and increased legal regulation in the province. These changes transformed the landscape for graduates, with many electing to set up private practice, specialize, or go into research work instead of returning to their home farm to practise.[61] These changes corresponded to a reciprocal relationship between the profession's yearning for more authority and OVC's efforts to keep up with an evolving agricultural economy.

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[60] Materia Medica is a Latin term used in early medicine to classify medicines according to its procurement from vegetable, animal, and mineral sources and the "nature, preparation, and properties of substances or mixtures of substances, which were used as remedies for the treatment of diseases." The term, used widely for two millennia, dominated until "the Pasteurian and pharmacological revolutions [in human and veterinary medicine throughout] the second half of the nineteenth century led to its gradual abandonment." Peter Lees, Wolfgang Bäumer, and Pierre-Louis Toutain, "The Decline and Fall of Materia Medica and the Rise of Pharmacology and Therapeutics in Veterinary Medicine," *Frontiers in Veterinary Science* 8 (2022): 1–22. https://doi.org/10.3389/fvets.2021.777809. French veterinary surgeon Claude Bourgelat, who founded the first veterinary school in Lyon, France, claimed eighty percent of the materials that he used derived from plant-based sources, twenty percent of substances originated from animals, and twenty percent originated from the mineral kingdom. Claude Bourgelat, *Matière Médicale Raisonnée ou Précis des Médicamens Considérés dans Leurs Effets, à l'Usage des Élèves de l'École Royale Vétérinaire, avec les Formules Médicinales de la Même École* (Lyon: Jean-Marie Bruyset Imprimeur-Libraire, 1765); Lees, Bäumer, and Toutain, "The Decline and Fall of Materia Medica and the Rise of Pharmacology and Therapeutics in Veterinary Medicine," 2. Though these percentages reflect the number of substances listed, they do not necessarily reflect farmers' widespread use of substances from the mineral kingdom, such as arsenic, iron (ferric sulphate), or mercury.
The term was also used in amendments to a number of *Veterinary Practice Acts* throughout the 1890s to define medicinal instructions and examination requirements in the training of professional veterinarians. Government of Ontario, *Agriculture and Arts Act—The Veterinary College*, Chapter 11, 1886, 38, reprinted in Barker and Evans, *Century One*, 419; Government of Ontario, *An Act Respecting Veterinary Surgeons*, Chapter 30, 1895, 181, reprinted in Barker and Evans, *Century* One, 420; Government of Ontario, *An Act Respecting Veterinary Surgeons*, Chapter 184, 1897, 1809, reprinted in Barker and Evans, *Century* One, 423.

[61] For more discussion on why veterinary and agricultural college graduates did not return to the family farm, see David C. Jones, ""We Can't Live on Air All the Time": Country Life and the Prairie Child," in *Studies in Childhood History: A Canadian Perspective*, eds. Patricia Rooke and R. L. Schnell (Calgary: Detselig, 1982), 190–193, where the author discusses a five-part series on this decision, entitled "The Story of a Farm Boy," published in *The Farmer's Advocate and Home Journal*, Part I, LIII, no. 1360 (October 17, 1918): 1663; Part II, LIII, no. 1362 (October 31, 1918): 1751; Part III, LIII, no. 1363 (November 7, 1918): 1787; Part IV, LIII, no. 1364 (November 14, 1918): 1831; Part V, LIII, no. 1366 (November 28, 1918): 1921. Also shown in, Linda M. Ambrose, "'Better and Happier Men and Women': The Agricultural Instruction Act, 1913–1924," *Historical Studies in Education* 16 (2): 274. https://doi.org/10.32316/hse/rhe.v16i2.333.

In the late nineteenth century, few people from rural communities attended the college. Many faced financial constraints, did not have the right academic qualifications, or were unable to leave work on the family farm; others did not value institutional veterinary training. Institutional efforts to respond to these criticisms are evident in the OAC and Experimental Farm's *Ninth Annual Report*, published in 1883. In it, veterinary science professor F. C. Greenside argued that the veterinary department lacked sufficient space to isolate animals when they became sick, which hindered their ability as a veterinary institution to prevent the spread of illness.[62] Greenside also raised funding issues and justified the work of OVC and Experimental Farm by highlighting the college's focus on both theoretical and practical instruction—students would learn critical skills that they could employ on their home farms.[63] For example, in their first year, students learned about the anatomical differences between horses and "ruminants"; in their second year, they learned about "Veterinary Materia Medica" and "The Principles and Practice of Veterinary Medicine and Surgery.[64] However, Greenside notes the difficulty in developing course material for students with vastly different experiences and time to devote to their studies. Some students were able to complement their studies with work on their home farms; some students lacked "foundational" knowledge; and others were incapable of understanding more advanced subjects due to a lack of previous training in anatomy, physiology, and Materia Medica. Consequently, in 1883, Greenside decided that a course on "Veterinary Obstetrics" would be the most beneficial not only due to its "paramount importance to raisers of stock," but also because "gaining a knowledge of the anatomy and physiology of the genital organs would occupy a comparatively short time, and allow [students] to devote themselves to something really practical."[65] Modifying the institutional curriculum to emphasize practical skills

[62] James Mills, *Ninth Annual Report of the Ontario Agricultural College and Experimental Farm, December 1883* (Toronto: Ontario Agricultural College, 1884), 200.
[63] Mills, *Ninth Annual Report of the Ontario Agricultural College and Experimental Farm, December 1883*, 195.
[64] Mills, *Ninth Annual Report of the Ontario Agricultural College and Experimental Farm, December 1883*, 192 and 193.
[65] Mills, *Ninth Annual Report of the Ontario Agricultural College and Experimental Farm, December 1883*, 194.

in combination with advances in veterinary science in courses such as obstetrics and veterinary jurisprudence helped professional veterinarians respond to criticisms about the expense and duration of veterinary training, which in turn helped to attract more students.

When C. A. Zavitz, who later became an agronomist and head of the Field Husbandry department at OAC, took the course on veterinary obstetrics in 1886, he noted that an important aspect of the course was keeping records of studs because "each breed has individuality."[66] According to Zavitz's notes, the "American continent has had a good deal to do with [this record keeping] as they wanted a correct statement of what they were [guilty]."[67] In addition, the lectures focused on the "English Cart and Shire Horse," the "Clyde," the "Suffolk Punch," the "Purcheron" [sic], the "Cleveland bred in Yorkshire," and the "Thoroughbred and Blood horse" while referencing the "Arab" horse throughout for comparison to an older breed line. Understanding different genetic dispositions was of great concern, given that a shift had already occurred in the seventeenth and early eighteenth centuries when riding became paramount for the military. Breeders became worried about the move away from "utility motives" when the thoroughbred, bred as a working horse, was becoming more popular as a racehorse.[68]

At first glance, the obstetrics course appears to be about care before, during, and after birth; however, these lectures also emphasized the anatomical differences between each breed by referencing the anatomical changes that resulted from different breeding practices. On one occasion, Zavitz noted that the English Cart horse or Shire horse were heavy horses with Spanish genes and

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[66] Johnston, *E. C. Drury: Agrarian Idealist*, 19; C. A. Zavitz, "Student Notebook, Materia Medica – Veterinary Obstetrics," 1885–1886, CA F163, RE1 OAC A0813, Box 1, 1, C. A. Zavitz Collection, University of Guelph Archives & Special Collection, Guelph, Ontario. Zavitz was from Coldstream, Ontario, less than thirty kilometres west of London. He was a "Quaker and a pacificist" who, as President of OAC during the First World War, "opposed military organization on campus." He later became a prominent professor at OAC in field husbandry, where his experimental work on barley, soybeans, and alfalfa "especially benefitted Ontario Dairy Farmers." "Charles Ambrose Zavitz," *140 Faces of OAC* (September 18, 2014). https://www.uoguelph.ca/oac/140faces/charles-ambrose-zavitz.
[67] Zavitz, "Student Notebook, Materia Medica – Veterinary Obstetrics," 1886, 1.
[68] Derry, *Art and Science in Breeding Chickens*, 23–24.

were brought to England during the Norman Conquest before being mated with horses in England. He noted that Arabian horses gave "activity" and "Flemmish horses gave their weight."[69] He then recorded that the Clyde horses came from Scotland and "showed more uniformity of features than the Cart horse" before discussing the particular anatomical differences in each breed and tracking some prominent Canadian lineages.[70] In reality, the late nineteenth-century veterinary obstetrics course focused more on historical lineages than on scientific methods. This focus likely helped students distinguish between horses from different genetic backgrounds and understand how horses were anatomically better equipped for different work at the time. Understanding the principles of genealogical breeding and past breeding practices would have also helped veterinarians in their examination of livestock for trade.

In the late nineteenth century, OVC placed value on the recruitment of "pardonable" students "with a taste for the work but with limited educational background."[71] However, the college faced growing criticism about this practice. In 1897, an editorial in *The Farmer's Advocate* argued that "the time [was] ripe for fixing the standard of matriculation at least as high as a third-class non-professional certificate." The editor called for entrance requirements in line with other university programs at the time, for expanding the course to four years, and for granting veterinary degrees "vested in the Provincial University, as in the case of graduates from the Agricultural College."[72] As the state of education in Ontario had developed substantially since the veterinary course first began and had consequently become the "admiration and envy of the world," the editor argued that OVC should raise its requirements accordingly. He believed that veterinarians should embark on an education similar to medical doctors, combined with the "careful study of his subjects of treatment

[69] Zavitz, "Student Notebook, Materia Medica – Veterinary Obstetrics," 1886, 2.
[70] Zavitz, "Student Notebook, Materia Medica – Veterinary Obstetrics," 1886, 3, 26, and 27.
[71] "Veterinary Education," *The Farmer's Advocate* XXXII, no. 425 (March 1, 1897): 99; Barker and Evans, *Century* One, 83.
[72] "Veterinary Education," *The Farmer's Advocate*, 99.

in practice, from the fact that they are dumb and, hence, incapable of assisting him in the diagnosing of their diseases."[73] This editorial was motivated by the implementation of a special examination for veterinarians to become meat inspectors "under the new quarantine regulations."[74] It came at a time when OVC faced criticism for its standard of education in comparison to the Montréal Veterinary School, which had aligned itself with McGill's medical school to offer more scientific content and comparative medicine. Nevertheless, OVC's focus on the "art of veterinary medicine" and increasing the number of qualified veterinarians had encouraged more students to enroll before the turn of the twentieth century, when a steep drop in enrolment occurred.[75]

After the veterinary program at OVC in Toronto extended its course to three years in 1907, it became a provincial institution in 1908, offering six-month terms with special courses on veterinary jurisprudence, pharmacy, and meat inspection.[76] These special courses changed according to public demand for livestock health knowledge, with OVC eventually adding courses on dairy inspection, histology, pathology, and bacteriology, to name a few, when there was a need for specialized knowledge on particular diseases, livestock, or research advancements in veterinary science.[77] Courses in veterinary jurisprudence equipped students with experiential knowledge essential to common veterinary practices and services that veterinarians were expected to provide. However, before veterinary jurisprudence was included in the formalized curriculum, this kind of knowledge was also required of experiential practitioners.

Similarly, before the start of the First World War, the curriculum at OVC included obstetrics, also a skill set required of experiential practitioners, in a course on cattle diseases and

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[73] "Veterinary Education," *The Farmer's Advocate*, 99.
[74] "Veterinary Education," *The Farmer's Advocate*, 99.
[75] Dukes, "On the Middle Road," 947.
[76] Barker and Evans, *Century* One, 94. For comparison, in 1906, Iowa State Veterinary School was the first to implement the four-year curriculum for the DVM degree. Cheville, *Pioneer Scientists and the Great Animal Plagues*, 126.
[77] E. A. A. Grange, "Report of the Ontario Veterinary College, 1909," Toronto: The Ontario Department of Agriculture, 1910, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 22; Barker and Evans, *Century* One, 94.

surgery. From 1913–1915, obstetrics lectures, presumably delivered by J. N. Pringle, professor of "Sporadic Diseases of Horses and Cattle, Dentistry, Principles of Horse shoeing [sic]," included more substantial scientific descriptions compared to the late nineteenth century, when the course relied mainly on historical genetics data.[78] The obstetrics course was required for second-and third-year students, and was fittingly delivered in the spring term.[79] By 1915, a fall course was added for third-year students, to address the growing demand for veterinary knowledge related to breeding livestock.

In response to the industrialization of farming practices before and after the First World War, OVC began to offer an obstetrics course in the fall, winter, and spring terms by 1932. The course included scientific terms (anatomical and procedural) still used today and offered detailed scientific understandings of common birthing and breeding challenges. For example, the third-year course focused on identifying anatomical functions and early signs of pregnancy,[80] complete with drawings of ideal anatomical changes during the birthing process,[81] as well as on the symptoms and timelines for oestrum and gestational periods in different livestock and domestic animals.[82] Students also learned about health issues that regularly affected different livestock animals, such as amaurosis

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[78] Obstetrics is not listed within the list of subjects taught by college staff; however, it appears alongside Shepherdson's notes from lectures on cattle diseases and surgery. In OVC's annual report for 1915, Pringle was listed as professor of "Sporadic Diseases of Horses and Cattle, Obstetrics, Dentistry, [and] Principles of Horse-shoeing," delivering lectures to second-year students in the spring and third-year students in the fall and spring. He was also listed under the "Brief Synopsis of Methods Adopted in Teaching Various Branches of Veterinary Science in this College." Grange, "Report of the Ontario Veterinary College, 1913," 4; E. A. A. Grange, "Report of the Ontario Veterinary College, 1915," Toronto: The Ontario Department of Agriculture, 1916, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 8, 17, 18, and 24; J. Stanley Shepherdson, "Student Notebook, Cattle Diseases and Obstetrics & Surgery," 1913–1915, J. S. Shepherdson Papers, CA F168-7-48, RE1 OVC A0122, Box 1 File 1.12, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario. Pringle was also listed as a professor of "Sporadic Diseases of Horses and Cattle; Obstetrics; Dentistry; Principles of Horse Shoeing" from 1915–1930 in F. Eugene Gattinger, *A Century of Challenge: A History of the Ontario Veterinary College* (Toronto: University of Toronto Press, 1962), 164.

[79] Grange, "Report of the Ontario Veterinary College, 1913," 8.

[80] George F. O. Sharpe, "Student Notebook, Obstetrics," 1932, CA F168-10-14, RE1 OVC A0102, Box 1 File 1.3, George F. O. Sharpe Papers, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.

[81] Sharpe, "Student Notebook, Obstetrics," 1932.

[82] Sharpe, "Student Notebook, Obstetrics," 1932.

(temporary vision loss), paraplegia, abdominal floor issues, ruptured reproductive organs and muscles, hernias, and torsion of the uterus, to name a few.[83] After establishing this foundational knowledge in the fall term, obstetrics lectures in the spring term focused on effective treatment procedures and the challenges that disease posed to the fetus, such as "mummification," sporadic, accidental, infectious, and contagious abortion.[84] In these lectures, R. A. McIntosh also described procedures such as "caesarian sections and gastro historotomies [sic]," including more harmful "evisceration" treatments where limbs or organs were moved to aid the delivery of breach animals or overcome "maternal" or "fetal dystokia [sic]," in addition to the equipment required to execute these procedures effectively and methods to eliminate infection.[85] He also described common post-partem care practices such as the repairing of damaged organs, "haemorrhage," and "laminitis."[86] As of 1932, obstetrics lectures began to incorporate more than just anatomical descriptions in the curriculum. In tandem with the growth of livestock farming, faculty responded to farmers' demand for further knowledge to maintain the health of their livestock and the value they placed on future offspring. [87]

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[83] Sharpe, "Student Notebook, Obstetrics," 1932.
[84] Sharpe, "Student Notebook, Obstetrics," 1932.
[85] Though teaching professors were not listed in the 1934 Annual Report, R. A. McIntosh was listed as a professor of "Diseases of Cattle, Obstetrics and Therapeutics in annual reports for 1933 and 1935," and submitted the "Report for the Committee Making a Survey of Mineral Deficiency Disease in Cattle for the Year 1933," and reports for "Johne's Disease of Cattle" and "Congenital Deformity in a Calf" in 1933, "Swine Erysipelas" in 1934, "Outbreak of Depraved Appetite in Cattle" in 1935, and "Joint-Ill in Foals," "Suspected Forage Poisoning," "Pyelonephritis [a fatal disease in the kidneys, ureter, and bladder of swine, sheep, horses, and dogs]," and "Diseases of Swine" looking at pig farrowing losses, in 1936. C. D. McGilvray, "Report of the Ontario Veterinary College, 1933," Toronto: The Ontario Department of Agriculture, 1934, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 24–29; C. D. McGilvray, "Report of the Ontario Veterinary College, 1934," Toronto: The Ontario Department of Agriculture, 1935, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 24–28; C. D. McGilvray, "Report of the Ontario Veterinary College, 1935," Toronto: The Ontario Department of Agriculture, 1936, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 15–16; Sharpe, "Student Notebook, Obstetrics," 1932. R. A. McIntosh was listed as professor of "Diseases of Cattle; Obstetrics; Pharmacy; Therapeutics; Diseases of Ruminants and Swine; Pharmacology" from 1920–1945 in Gattinger, *A Century of Challenge: A History of the Ontario Veterinary College*, 164.
[86] Sharpe, "Student Notebook, Obstetrics," 1932.
[87] Sharpe, "Student Notebook, Obstetrics," 1932.

The Ontario Veterinary College (OVC) also held annual conferences where students and practicing veterinarians could learn about recent advancements in veterinary science. For example, in concurrence with developing legal standards of veterinary practice, OVC first offered a course on veterinary jurisprudence in 1909. Initial lectures informed veterinarians about the onus of responsibility for those involved in common legal disputes between neighbours and different animal-human relationships. Before long, the course included topics on fraud and negligence, and illustrated how to navigate situations where people acted in contradiction to new public standards in veterinary science—for example, selling disease-ridden livestock to avoid costs associated with their destruction and the containment of disease. This kind of instruction equipped veterinarians with practical advice that prepared them for mediatory roles.

J. Stanley Shepherdson indicates in his notes that Dyce W. Saunders's 1914 lectures on veterinary jurisprudence included the public and private sale of animals, the hiring of horses, contracts for borrowing, and animal containment. The role of clinical law and veterinary surgeons was also highlighted, along with regulations concerning animal health and welfare, methods to control the spread of disease between animals and from animals to humans, and potential conflicts related to transportation.[88] Saunders was a lawyer in Toronto who taught veterinary jurisprudence from 1909 until 1922, leading up to OVC's move to Guelph when George A. Drew replaced him.[89]

[88] J. Stanley Shepherdson graduated from OVC in 1915 before establishing a private practice in Markdale, Ontario (approximately one hundred kilometres north of Guelph, Ontario). Later, he became an inspector for the Health of Animal Branch in Kingston until he retired in 1959. J. Stanley Shepherdson, J. S. Shepherdson Papers, 1912–1973, CA F168-7-48, RE1 OVC A0122, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.

[89] George A. Drew, following an injury in the First World War, studied at Osgoode Hall before becoming a lawyer in 1920. He practised law in Guelph before becoming its mayor in 1925, then master of the Ontario Supreme Court and chair of the Ontario Securities Commission in 1929 and 1931, respectively. In 1938, he became leader of Ontario's Conservative party and won the 1943 election, where he became Premier of Ontario. Later, in 1948, he was elected leader of the federal Progressive Conservative Party before becoming Canadian high commissioner to England in 1957. "Drew, George Alexander," *The Canadian Encyclopedia* (March 4, 2015). https://www.thecanadianencyclopedia.ca/en/article/george-alexander-drew.

Significant changes during the First World War, such as advancements in the transportation of animals to the frontlines, followed by the expansion of social regulation, industry, and veterinary science in the 1920s, spearheaded a change in focus for the veterinary jurisprudence course. George F. O. Sharpe's class notes from Angus Dunbar's lectures in 1934 indicate that Dunbar emphasized legal capacities, misrepresentations, and the importance of evidence—particularly concerning the enforcement of contractual agreements and "good morals." He referenced the *Diseases of Animals Acts*, a series of Acts assented by the British Parliament to limit the spread of disease among livestock.[90] Shepherdson noted regulations for the "cleaning and disinfecting of cars, vessels, stockyards, etc. used for the carrying or keeping of animals. After one cargo of animals have been delivered that car must be disinfected before any other animals are placed therein."[91] The increasing regulations that followed the First World War coincided with the rise of industrial livestock farming and trade.[92] However, they also reflected the rise of veterinary authority in Ontario and, to some extent, the rise of professional veterinary practices.

Throughout the early twentieth century, professional veterinarians modified institutional lectures in veterinary jurisprudence to supply veterinarians with legal knowledge of health and behavioural issues that had become problems for animals used by humans for companionship, leisure, or livestock protection. Notes from the veterinary jurisprudence course in 1914 show that Saunders' lectures started with legal definitions, for example, of the common law of England, private

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[90] For British parliamentary debates on the consolidation of the *Contagious Diseases Acts* into the *Diseases of Animals Acts* in 1894, see House of Commons Hansard, *Diseases of Animals Act, 1894*, Vol. 37, Thursday February 20, 1896. https://hansard.parliament.uk/commons/1896-02-20/debates/97387679-6ff4-4e3d-8f0f-fe9307b58d32/DiseasesOfAnimalsAct1894. For UK Parliament, *Diseases of Animals Acts, 1894, 1896, 1903, 1909, 1910, 1922, 1924, 1925, 1927,* and *1935*, The National Archives Online, www.legislation.gov.uk. For 1894, see https://www.legislation.gov.uk/ukpga/Vict/57-58/57/pdfs/ukpga_18940057_en.pdf.

[91] Shepherdson, "Student Notebook, Veterinary Jurisprudence," December 11, 1914, 42.

[92] Sharpe, "Student Notebook, Veterinary Jurisprudence," January 17, 31 and February 14, 28, 1934, George F. O. Sharpe Papers, C. A. V. Barker Collection, University of Guelph McLaughlin Archives, CA F168-10-14, RE1 OVC A0102 Box 1 File 1.3.
The *Diseases of Animals Act* underwent a significant evolution throughout the early twentieth century, in response to the rise of livestock farming. These updates reflect the changing landscape of industry and the increasing importance of animal health and welfare regulations.

versus public laws, property, the statute of frauds, receipts and high receipts, and a "note on memorandium [sic] in writing."[93] One lecture was devoted entirely to "Laws in relation to Vicious Animals," which recognized four categories of animals—animals with a "savage nature," "wild but not vicious," "wild but never harm," and "common domesticated animals."[94] As an example, the lecturer referenced a circus that was held liable for all damage done after animals escaped, causing damage.[95] The student's notes further outline that dogs "must not be shot unless [they were] actually found worrying sheep or other animals." However, in Ontario, the law about trespassing dogs had been "revised" to specify that when a dog was "chasing, barking at or terrifying sheep in a field on a farm where sheep [were] kept he may be shot if he [was] found on the farm between Sunset and sunrise."[96]

OVC revised the curriculum to include new laws, thereby equipping students with pertinent knowledge when they faced conflicts between neighbours, and empowering veterinarians to deliver expert testimony in court cases. Veterinary jurisprudence lectures in 1914 indicate that OVC expected students to know the difference between sound and unsound animals, between an unsound animal and one that displayed a "bad habit" or "vice," and how their ruling on warranty agreements could economically affect farmers.[97] By 1934, the groundwork for increasing regulation

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[93] Grange, "Report of the Ontario Veterinary College, 1909," 7; Russell Field, "SAUNDERS, DYCE WILLCOCKS," *Dictionary of Canadian Biography*, vol. 15, University of Toronto/Université Laval, 2005, http://www.biographi.ca/en/bio/saunders_dyce_willcocks_15E.html; Barker and Evans, *Century* One, 171; Shepherdson, "Student Notebook, Veterinary Jurisprudence," October 9 and 16, 1914, J. S. Shepherdson Papers, CA F168-7-48, RE1 OVC A0122, Box 1 File 1.13, C.A.V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 1–6.

[94] Shepherdson, "Student Notebook, Veterinary Jurisprudence," October 23, 1914, 8.

[95] Shepherdson, "Student Notebook, Veterinary Jurisprudence," October 23, 1914, 8.

[96] Shepherdson, "Student Notebook, Veterinary Jurisprudence," October 23, 1914, 9.

[97] For example, a veterinary surgeon was called upon to examine a horse "(especially a valuable one)" for "a slight nasal discharge, cough, minor injury, he could not give a Certificate that said the horse [was] sound, though he is most sure to be just temporarily unsound." In this situation, the lecturer advised that the veterinarian should wait a few days before issuing the certificate, as a horse declared unsound would damage the animal's reputation for life. Thereby affecting the farmer's ability to claim an acceptable monetary value. Shepherdson, "Student Notebook, Veterinary Jurisprudence," November 27, 1914, 30–31, 32, and 33.
Like Saunders, Dunbar, who began teaching at OVC in 1926, also explained how a veterinarian should identify an unsound horse or a horse with a vice. However, he expanded on this by including legal warranties, providing an example

was already laid and veterinarians understood how evolving laws pertained to their work and why standardization of the profession was so important. As livestock became more valuable to farming operations, their value as property made the assessment of damages, which a veterinarian could validate, more critical. The increasing value of livestock also made standardization and professionalization more important.

In 1934, Angus Dunbar's lectures at OVC expanded upon the earlier curriculum by outlining the differences between written and verbal offers, the duration of offers, five rules for consideration, and the statute of frauds. Dunbar explained the legal capacity of different parties before noting issues with consent, such as mistake, misrepresentation, fraud, duress, and undue influence, especially those that may null and void contracts.[98] Dunbar's lectures included a discussion on how a veterinarian's witness testimony could be used in court. Though provincial laws entitled professional veterinarians to be reimbursed for acting as a witness in court proceedings as early as 1896, this was not recorded in Shepherdson's notes from Saunders' lectures in 1914.[99] Some veterinarians found themselves providing evidence on behalf of different parties, such as neighbours, about the state of an animal's health or livestock health care administered by farmers or experiential practitioners. Being called upon as witnesses in judicial proceedings meant that veterinarians' expertise needed to be validated formally to hold weight within the proceedings. Sharpe recorded that Dunbar lectured on how "the value of expert evidence is very slight as it [was] usually biased and an expert [was] not indictable for perjury."[100] Nevertheless, institutional veterinarians worked to maintain the integrity of the veterinary profession and recognized the integral role their knowledge could play in the public

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of how horse markets often had written policies with time limits, allowing "any purchaser [to] make an objection." Sharpe, "Student Notebook, Veterinary Jurisprudence," 1934.

[98] Sharpe, "Student Notebook, Veterinary Jurisprudence," 1934.

[99] Government of Ontario, *Agriculture and Arts Act—The Veterinary College*, Chapter 11, 1886, 37–38, reprinted in Barker and Evans, *Century* One, 418–419.

[100] Sharpe, "Student Notebook, Veterinary Jurisprudence," 1934.

sphere. By analyzing specific cases, Dunbar helped veterinary students better understand their new role as mediators, which they could find themselves in after diagnosing and treating animals. The ability to identify livestock health ailments and recognize maltreatment and negligence meant veterinarians could readily serve as expert witnesses. Throughout the early twentieth century, veterinary jurisprudence lectures at OVC reflected significant social, cultural, industrial, and economic developments that influenced changes in the animal–human relationship.

Before the First World War, OVC's veterinary jurisprudence lectures reflected a period of increasing transportation infrastructure and the growing popularity of motor vehicles. Saunders' lectures from 1914 also incorporated key developments during a period of transition when some were unfamiliar with the "Laws of the Road" and the *Highway Travel Act*. These lectures helped future veterinarians ascertain what a bailor or bailee must do in particular circumstances.[101] OVC expected graduates to advise livestock owners on how to maintain contemporary veterinary standards. Lectures even included how to deal with common scenarios, such as what to do when a motor vehicle encountered a horse-driven or "motor vehicle pet."[102] Saunders noted the procedures for navigating a four-way stop or turning on streets among street cars and motor vehicles; the measures that limited a motor vehicle from coming within one hundred yards of a horse if it had frightened it, and if so, the driver was required to turn off the motor.[103] Some of these laws may seem ordinary today (like procedures at a four-way stop). However, at the time, when motor vehicles were being introduced on the same roadways as horse-drawn carts, it was important that

[101] Shepherdson, "Student Notebook, Veterinary Jurisprudence," November 20, 1914, 23.
[102] By motor vehicle pet, the lecturer referred to horses who pulled carriages on roads shared with motor vehicles. Shepherdson, "Student Notebook, Veterinary Jurisprudence," November 20, 1914, 25–26.
[103] Shepherdson, "Student Notebook, Veterinary Jurisprudence," November 20, 1914, 25–26, and 29.

veterinarians, especially those in urban centres, understand the law—and human responsibilities to animals.[104]

By 1934, Dunbar's lectures had evolved beyond the role of livestock as units of transportation to the "carrying of animals." In the aftermath of the First World War—a period marked by increased animal transportation and global trade—the laws regarding the transportation of animals, especially horses, by railway or steamship, had changed. In a case brought against the London & Western Railroad, Sharpe noted that the court did not find the railway company liable because the horse's injury was the result of its own inherent vice, "from fright or temper or struggling to keep its legs."[105] In Nugent versus Smith, a transportation company relocated a mare from New York to London by train. "Ordinary rough weather" and "partly the conduct of the mare herself by reason of fright and consequent struggling" were found "without negligence on the part of the carrier."[106] Sharpe's careful documentation of cases that determined the liability of the transporter or the transporting company for livestock injuries sustained during transport underscored the importance of this legal knowledge for veterinarians.

Between 1914 and 1934, societal and legal changes prompted the development of curricula that underscored the need for veterinarians to understand changing legal regulations, especially when examining animals injured or infected by disease during local and trans-Atlantic transportation through some of Canada's largest trading cities. The inclusion of legal cases in veterinary education highlights the significant role that veterinarians played in ensuring the welfare of animals during transportation.

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[104] Ronald Kline and Trevor Pinch, "Users as Agents of Technological Change: The Social Construction of the Automobile in the Rural United States," *Technology and Culture* 37, no. 4 (1996): 763–95; Gijs P. A. Mom and David A. Kirsch, "Technologies in Tension: Horses, Electric Trucks, and the Motorization of American Cities, 1900-1925," *Technology and Culture* 42, no. 3 (2001): 489–518.
[105] Sharpe, "Student Notebook, Veterinary Jurisprudence," 1934.
[106] Sharpe, "Student Notebook, Veterinary Jurisprudence," 1934.

Both Shepherdson's lecture notes from Saunders's lectures and Sharpe's lecture notes from Dunbar's lectures refer to contagious diseases. Shepherdson's 1914 notes outline that "Regulations re Contagious Disease" addressed cases where it was the "duty of the attendant or "Veterinary Surgeon" [to] report the case [of disease] at once to the nearest government Vet. Inspector," before also inspecting carcasses and disinfecting "cars … in a satisfactory manner."[107] Sharpe's 1934 notes, entitled *The Diseases of Animals Act*, discussed more rigid "rules regarding the cleaning and disinfecting of cars, vessels, stockyards, etc." Not only were livestock environments to be cleaned following the observation of contagious symptoms, but by 1934, these environments needed to be "disinfected" habitually after "delivery" and "before any other animals [were] placed therein."[108] Preventive measures like those outlined in 1934 resulted from the catastrophic outcome of unidentified diseases, particularly evident during the mass transportation of horses to the frontline during the First World War. By providing lectures on veterinary jurisprudence, OVC ensured that practising veterinarians had the legal knowledge they would need when serving as practitioners in the field and when called upon as expert witnesses.

Professional veterinarians in private practice and working as government officials recognized the importance of including veterinary jurisprudence in institutional curricula. As a result, in 1909, third-year students were required to attend lectures for one hour each week and then take an exam on veterinary jurisprudence.[109] In 1932, professors also asked students to reflect on the legalities of

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[107] Shepherdson, "Student Notebook, Veterinary Jurisprudence," December 11, 1914, 42.
[108] Sharpe, "Student Notebook, Veterinary Jurisprudence," 1934.
[109] Grange, "Report of the Ontario Veterinary College, 1909," 39, "1912," 30, and "1913," 7; W. B. M. Young Transcripts, April 15, 1910, and Benjamin D. Young Transcripts, April 30, 1929, May 2, 1930, May 2, 1931, CA F168-7-10, RE1 OVC A0108, Box 3, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario. A third-year exam on veterinary jurisprudence in 1930 required students to answer definitions and scenario questions. They were asked to define "Negligence, Contract, Vice as applied to horses, [and] Evidence" before answering scenario questions related to the buying and selling of horses in due time, written warranty on the sale of horses, a professional non-compete, and horses that sustained injuries during transportation. "Ontario Veterinary College Annual Examinations, 1931, Third Year, Veterinary Jurisprudence, Examiner – Angus Dunbar," CA F168-7-10, RE1 OVC A0108, Box 3, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.

specific veterinary practices in other courses.[110] An exam on sanitary service regulations, for example, asked fourth-year students to clarify "regulations governing the control and eradication of mange," "steps to control foot and mouth disease," government regulations for meat inspection, and laws regarding the sanitary conditions for different establishments.[111] These questions targeted standards that students were expected to maintain in their future role.

Since the provincial government made several amendments to the *Veterinary Science Practice Act*s throughout the early twentieth century and the interwar period, it became apparent that OVC graduates required extensive knowledge of legal responsibilities and standard practices in public health. Therefore, OVC separated the Sanitary Services Regulations course into two examinations in 1923—"The Animal Contagious Diseases Act and Regulation relating to Quarantine and Control of Disease" and "The Meat and Canned Food Act and Regulations."[112] The inclusion of legal regulations and expectations of the veterinary profession in relation to different subjects, as well as a course and exam on veterinary jurisprudence, illustrates institutional efforts to gain farmers' support, fulfill government expectations, and provide oversight over food production. By offering practical legal advice and including experiential examples, OVC helped restrict the work of experiential practitioners who had previously met the demand for livestock healthcare before veterinarians were readily accessible in rural communities.

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[110] For example, in an agricultural civics and economics exam, second-year students were asked to reflect on imposing regulations for import duties, the sovereignty of the state and individual, the Canadian banking system, and agricultural markets. "Ontario Veterinary College Annual Examinations, 1930, Second Year, Agricultural Civics and Economics, Examiners F. O. Hart & J. Coke," CA F168-7-10, RE1 OVC A0108, Box 3, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.

[111] "University of Toronto – Department of Veterinary Science, Annual Examinations, 1932, Fourth Year, Sanitary Service Regulations, Examiner – C. D. McGilvray," CA F168-7-10, RE1 OVC A0108, Box 3, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.

[112] C. D. McGilvray, "Report of the Ontario Veterinary College, 1923," Toronto: The Ontario Department of Agriculture, 1924, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 13.

Core courses on subjects such as obstetrics and veterinary jurisprudence attracted more veterinary students. The meaningful inclusion of experiential knowledge alongside recent advances in veterinary science also prepared veterinarian students for their future careers. Together, this approach became an effective strategy to marginalize widespread efforts to disseminate experiential knowledge in popular manuals while cementing the profession's authority and building confidence among farmers. Moreover, as the industrialization of livestock farming influenced changes to the animal–human relationship, a growing number of students recognized the value of an institutional education that included experiential knowledge alongside veterinary science.

Over time, educating students about professional responsibilities, in addition to their practice of veterinary medicine, became a significant component of the veterinary curriculum. The formal curriculum focused on the laws and legal obligations of veterinarians. It was combined with new legislation and the standardization of professional veterinary medicine to limit the ability of informal experiential practitioners to perform these professional duties. Students' understanding of the law needed to extend beyond the science and practice of veterinary medicine. Ultimately, legal responsibilities became an integral part of veterinarians' professional training, which increased both the authority of veterinarians and the number of veterinarians in the field.

The Addition of Specialized Courses

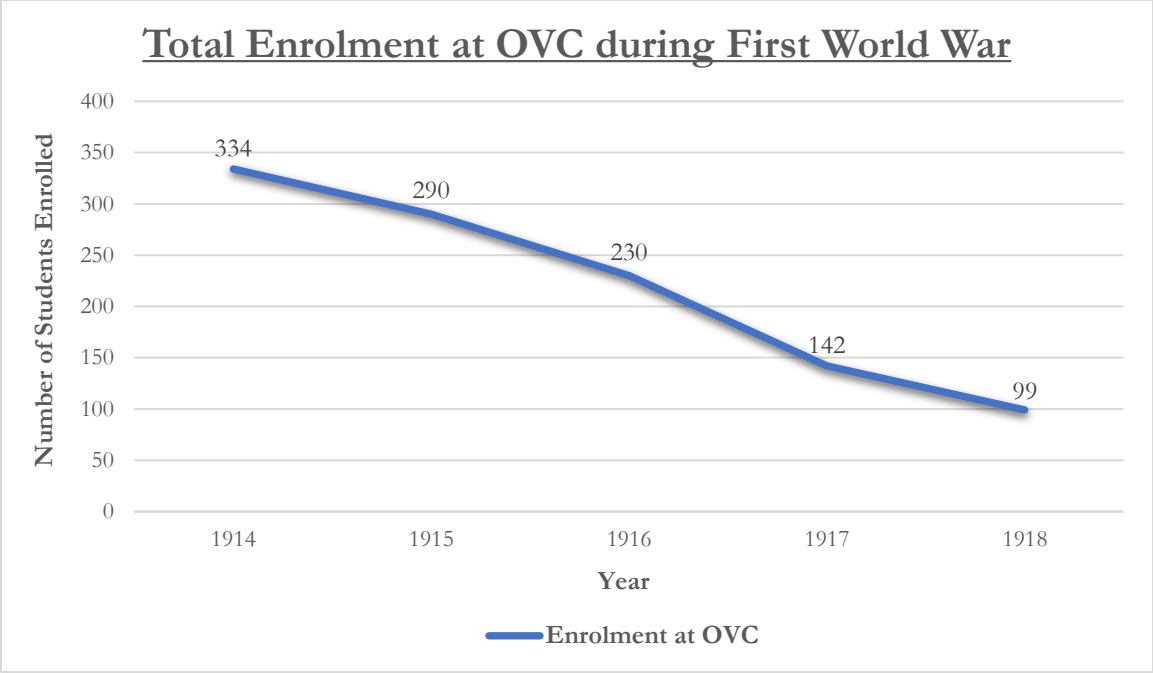
Throughout the early twentieth century, OVC regularly updated its curriculum to educate students and professional veterinarians about new methods of preventing or eradicating common livestock health issues. Following the First World War and alongside the industrialization of livestock farming, specialized training and course offerings educated veterinarians for their new roles in veterinary inspection and food distribution. Canadian society's newfound respect and demand for veterinary services followed the Canadian Army Veterinary Corps' success throughout the First World War.

Though this marked a pivotal moment in the history of veterinary education and authority—with an increase in educational standards, a lengthier program, and a move to rural Guelph—enrolment at OVC dropped during and following the war (see Tables 2.2 and 2.3). Enrolment was also much greater than graduate numbers, as not everyone passed or completed the full course. However, initially, this did not stop those who had completed some training at OVC from practising veterinary medicine.[113]

In response to calls from the government and farmers, OVC established specialized training to ensure the health of livestock and the quality of food products. Institutional leaders, government officials, and professors worked toward offering courses dedicated to educating students and updating professional veterinarians on issues related to veterinary hygiene, sanitation, and the inspection of food products. This specialized training resulted in the creation of a professional veterinary workforce that was capable of travelling to inspect outbreaks of disease and safeguarding the distribution of healthy, uncontaminated food products.

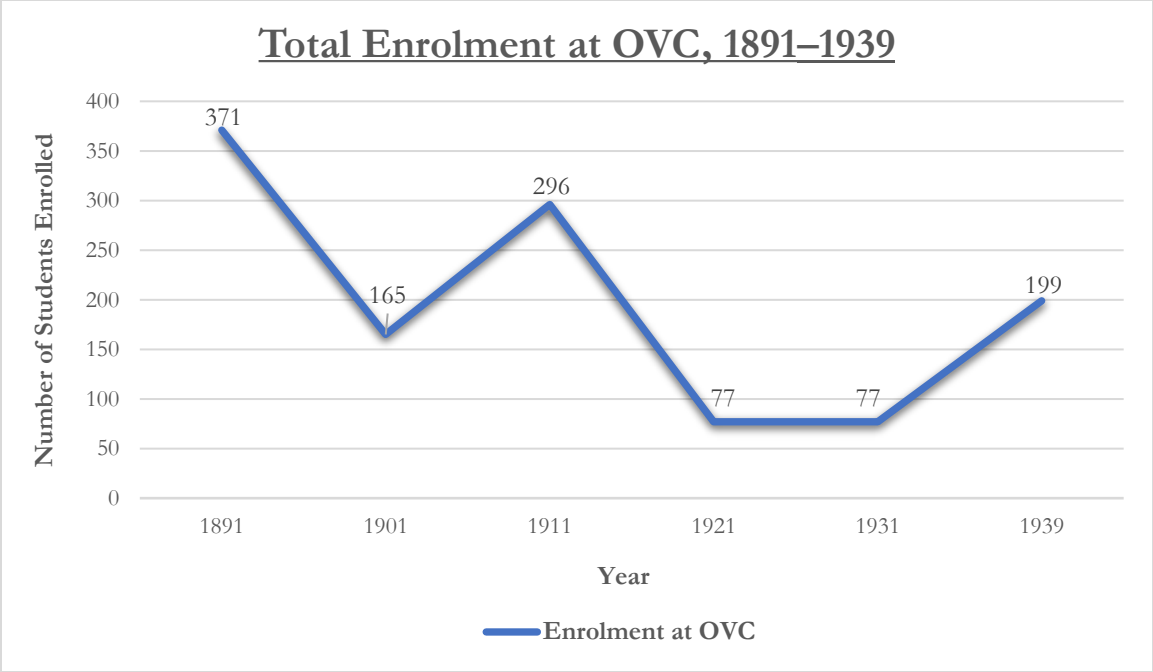
[113] Lisa Cox, Curator, Barker Veterinary Museum, Ontario Veterinary College, University of Guelph, Ontario.

Table 2.2: Total number of students enrolled at OVC throughout the First World War



Source: Minister of Agriculture, "Annual Reports—1914, 1915, 1916, 1917, 1918," as found in Barker and Evans, *Century One*, 392, footnote 30.

Table 2.3: Total number of students enrolled at OVC from 1891 to 1939



Source: Lisa Cox, Curator, Barker Veterinary Museum, Ontario Veterinary College, University of Guelph, Ontario. Lisa shared enrolment and graduate numbers for OVC from 1871 to 1939.

In the first decade of the twentieth century, there was a push throughout North America to raise entrance requirements and increase the length of veterinary study, with professional veterinarians taking part in contentious debates over standards for institutional veterinary education. Although OVC attracted many students, it had "shifting attendance records," "short terms," and did not have an educational requirement for matriculation.[114] Veterinary professor emeritus Norman Cheville argued that, in comparison, the Montréal school had "stiff matriculation exams, strict requirements for attendance, and long courses," which attracted few students before folding in 1903.[115] Queen's University's Veterinary School took the middle ground between the two schools' curricula, but only graduated nine students from 1895 to 1899 before dissolving.[116]

Of all the schools, OVC's approach proved to be the most popular. From 1863 to 1908, the school had 3,365 graduates, compared to Montréal's 315 graduates between 1866 and 1902.[117] In 1894 alone, Iowa State had eight graduates with a Doctor of Veterinary Medicine (DVM) degree, Pennsylvania's veterinary school had 22 graduates receiving the Veterinary Medical Degree (VMD), and Chicago Veterinary College granted 65 graduates the Doctor of Comparative Medicine (MDC), compared to OVC's 139 graduates receiving a Veterinary Surgeon (VS) degree (with 6 from Iowa).[118] OVC's annual report for 1927 noted that it had become easier to attract students with "complete high school matriculation" from across Canada and the US and, therefore, maintain entrance requirements.[119] OVC also proudly reported that most of its graduates were able to pass the "civil

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[114] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 127.
[115] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 127; Denis Goulet and Frédéric Jean, "McEACHRAN, DUNCAN McNAB," *Dictionary of Canadian Biography*, vol. 15, University of Toronto/Université Laval, 2005. https://www.biographi.ca/en/bio/mceachran_duncan_mcnab_15E.html.
[116] Dukes, "On the Middle Road," 947 and 951; Cheville, *Pioneer Scientists and the Great Animal Plagues*, 95.
[117] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 89.
[118] Charles H. Stange, *History of Veterinary Medicine at Iowa State College* (Ames: Iowa State College, 1929), 76; Louis Amos Klein et al., *History of the School of Veterinary Medicine of the University of Pennsylvania* (Philadelphia: University of Pennsylvania Veterinary Alumni Society, 1935), 157; and "College Commencements section," *American Veterinary Review* 18 (1894): 123–26, as found in Cheville, *Pioneer Scientists and the Great Animal Plagues*, 89.
[119] C. D. McGilvray, "Report of the Ontario Veterinary College, 1923," 4.

service examinations in both Canada and the United States for appointment as veterinary inspectors under the respective governmental departments."[120] The college conveyed that potential opportunities for graduates were growing, and as a result, if demand continued accordingly, there would be a shortage of veterinarians unless the college once again increased attendance.[121]

To continue fulfilling increasing demands for animal health knowledge, many special courses focused on treating and preventing diseases for horses, cattle, sheep, poultry, and swine. Earlier courses through the late nineteenth and early twentieth centuries included legislative changes, legal responsibilities for veterinarians, and justification for veterinary education by outlining the strides made. Later courses also involved technological advances, ways for graduates to keep up with recent advancements, and additional training. For example, OVC provided courses to train government meat and milk inspectors in the early twentieth century. Later in 1926, OVC established a specialized course on poultry diseases to help "diversify and improve" the standard of instruction "to more adequately equip graduates to perform the services which the community expects of them."[122] Administrators at OVC continuously worked to ensure that the curriculum met public demands for animal healthcare knowledge and treatments to increase their authority and standardize veterinary practices.

OVC not only responded to demands for veterinary services in rural communities but also addressed the needs of the state. Concerns over the spread of contagious diseases initially prompted the development of protocols to detect the onset of disease in animals, holding owners responsible for not declaring an outbreak or selling infected meat for consumption. Inspectors' examination of cattle for anthrax and the disposal of infected bodies and materials were essential for containing the

[120] C. D. McGilvray, "Report of the Ontario Veterinary College, 1927," Toronto: The Ontario Department of Agriculture, 1928, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 4.
[121] McGilvray, "Report of the Ontario Veterinary College, 1927," 4.
[122] McGilvray, "Report of the Ontario Veterinary College, 1926," 5.

disease and preventing its spread between humans and animals (as seen in Chapter 4). New legislation for veterinary inspections created employment opportunities in line with state policy expectations. However, as efforts to industrialize intensified, the inspection of food products and the distribution of sanitary knowledge became increasingly important for both the state and public health at large.

In 1908, OVC established courses on meat and milk inspection and veterinary hygiene. In its annual report, Principal E. A. A. Grange wrote to the Minister of Agriculture outlining that "the public demand for pure and healthful food ha[d] recently caused the more scientific inspection of meat supplies, and veterinarians especially trained for the purpose [we]re expected to do the work."[123] The course on veterinary hygiene was taught through lectures, using illustrations that promoted health and "observations in the Veterinary Infirmary."[124] On the other hand, instructors taught the meat and milk inspection course "both in the Class Room of the College, Abattoirs, and Dairies," following the laws of Veterinary Sanitary Science.[125] Establishing a foundational knowledge of recent regulations and advancements in sanitary practices was necessary to combat the spread of disease. Doing so in the increasingly industrial environments where these practices took place helped OVC provide experiential learning opportunities that better prepared students for their future roles.

With increasing specialization, the inspection course eventually split into two classes, meat inspection and dairy inspection, in 1909, then was renamed milk inspection, to devote enough time to each crucial sector.[126] By 1913, outside policy-makers and administrators also understood the

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[123] E. A. A. Grange, "Report of the Ontario Veterinary College, 1908," Toronto: The Ontario Department of Agriculture, 1909, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 10.
[124] Grange, "Report of the Ontario Veterinary College, 1908," 11.
[125] Grange, "Report of the Ontario Veterinary College, 1908," 12.
[126] Grange, "Report of the Ontario Veterinary College, 1909," 22.
R. E. Murray, a veterinary surgeon and part of Boulton's Mounted Infantry in Manitoba, conducted classes on meat inspection briefly in 1909 before A. C. Walker, a graduate of OVC in 1898 from Toronto, who initially focused on post-mortem examinations, took on the task in 1910. H. E. Hurd, also a veterinary surgeon who graduated in 1892 before he passed away in 1917, then J. A. Campbell, an active member of professional affairs for the militia, chairman of the

value of combining theoretical with practical exercises. However, their approach changed from providing practical skills that students could employ when they returned to their home farm, as Greenside promoted in 1883, to practical research skills that would serve consumers by ensuring healthy food products and overcoming public health challenges.

OVC began to focus on experiential laboratory work, possibly to keep up with demands on veterinarians or because the profession wanted to prove the value of veterinary standards in comparison to experiential practitioners. In the opening exercises for 1913, Archdeacon Cody commended OVC for the recent transitions: "Everybody knows that theory must be translated into practice or else it will be forgotten, and that practice is not of so much value without a proper understanding of theory. You are seeking to combine the two elements of theory and practice by your development of the laboratory method of teaching."[127] He then went on to highlight the professionalism and standards that students must meet within the context of veterinary science's widening scope and their responsibility to serve agricultural and Allied interests in the prevention of disease instead of solely focusing on curative methods.[128] Cody made his remarks within the context of OVC's move to a larger building (described in detail in the 1914 annual report) at the University of Toronto, which would house new equipment and provide more modern facilities to teach advancements in veterinary medicine, using visual projection equipment, to an increasing number of students.[129] All of the courses were taught in the new building, except botany, chemistry, and

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legislative committee for the Ontario Veterinary Association, and later a curator of the Toronto Riverdale Zoo, took on the task of conducting classes on dairy inspection in 1913. Veterinary hygiene remained a separate course taught by Grange until sometime after 1919, when he was professor emeritus, until 1923, when F. Torrance took over, instructing general veterinary hygiene and physiology, following over a decade of service as the Veterinary Director General of Canada. Cecil French, *A History of the Canadian Army Veterinary Corps in the Great World War, 1914–1919*, eds. C. A. V. Barker and Ian Barker (Guelph: Crest Books, 1999), 248; Barker and Evans, *Century One*, 98, 121, 123, and 133.

[127] Grange, "Report of the Ontario Veterinary College, 1913," 12.

[128] Grange, "Report of the Ontario Veterinary College, 1913," 14.

[129] E. A. A. Grange, "Report of the Ontario Veterinary College, 1914," Toronto: The Ontario Department of Agriculture, 1915, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 5–14; Grange, "Report of the Ontario Veterinary College, 1913," 17–20; Grange, "Report of the Ontario Veterinary College, 1915," 7.

physiology, which were taught in the University of Toronto's "capacious and well equipped laboratories."[130] However, these buildings in Toronto were considered "too valuable … for such purposes" following the First World War.[131] "Interference" from the University of Toronto, as C. D. McGilvray Principal of OVC (from 1918 to 1945) argued, accompanied by expanding demands for veterinary services led the newly appointed provincial Minister of Agriculture, Manning Doherty, to determine that Guelph would be a "more appropriate centre of operations for the fast-changing agricultural economy of Ontario."[132]

Conducting lectures in the classroom, abattoirs, and dairies allowed instructors to both dictate and provide experiential learning on the advantages of sanitary environments to limit the spread of disease. However, Hurd's course on dairy inspection also included:

> lectures in the construction of the dairy barn and milk house; the care of utensils; the handling of milk from the time it is drawn from the cow until it is placed upon the market for sale. Dairy Cattle in health and disease, especially those which are communicable to the human family through milk, and various other matters relating to dairy inspection.[133]

The Veterinary Director-General and "Meat Inspectors of the Dominion" also helped students gain practical experience by examining their work inspecting facilities and meat products at three large abattoir companies in Guelph: The Wm. Davies Co., Limited; The Harris Abattoir Co., Limited; and The Park Blackwell Co., Limited. This branch of the curriculum was of "increased importance," according to Principal Grange.[134] Both the meat inspection and dairy inspection courses focused on experiential training in relevant buildings and environments, and "wherever possible the specimens

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130 Grange, "Report of the Ontario Veterinary College, 1915," 7.
131 Gattinger, *A Century of Challenge*, 82.
132 Gattinger, *A Century of Challenge*, 83 and 86–89.
133 McGilvray, "Report of the Ontario Veterinary College, 1923," 12.
134 Grange, "Report of the Ontario Veterinary College, 1909," 11. Eventually, an abattoir was also built at OVC in 1927 to allow fourth-year students to advance their skills in working and managing this model environment. McGilvray, "Report of the Ontario Veterinary College, 1927," 33.

sent in for examination [were] used for purposes of demonstration in the College class rooms."[135] Before 1918, every abattoir or packing houses in Canada was required to have "qualified veterinarians" supervise work. However, qualified veterinarians were "assisted by lay inspectors who need not be qualified veterinarians, but whose qualifications must be such as to satisfy the Dominion Director General of Veterinary Service that they are fit for the position."[136] Many from within the profession considered this approach a necessity to producing veterinarians who could resolve recent challenges to public health.

In 1919, Ronald Gwatkin, a graduate from OVC with a diploma in 1919 and his DVSc in 1922, became a faculty member at OVC after serving with the Canadian Army Field Artillery and Gas Defence Services.[137] Gwatkin lectured on dairy inspection in addition to veterinary bacteriology and biologics, and C. H. Weaver conducted the course on meat inspection.[138] In 1923, OVC combined courses on meat and milk inspection with veterinary hygiene to provide more specialized training in milk hygiene and meat hygiene, now taught by H. E. Batt, with a general hygiene course taught by F. Torrance, who had relinquished his appointment as Veterinary Director-General of Canada to work at OVC. Like veterinary jurisprudence, OVC's annual report of 1923 described the meat, milk, and veterinary hygiene courses in greater detail to emphasize the importance of each topic.

The new descriptions, as illustrated in Figure 2.3, moved beyond an emphasis on experiential training and industrial inspections to understand the interdependence between human and animal

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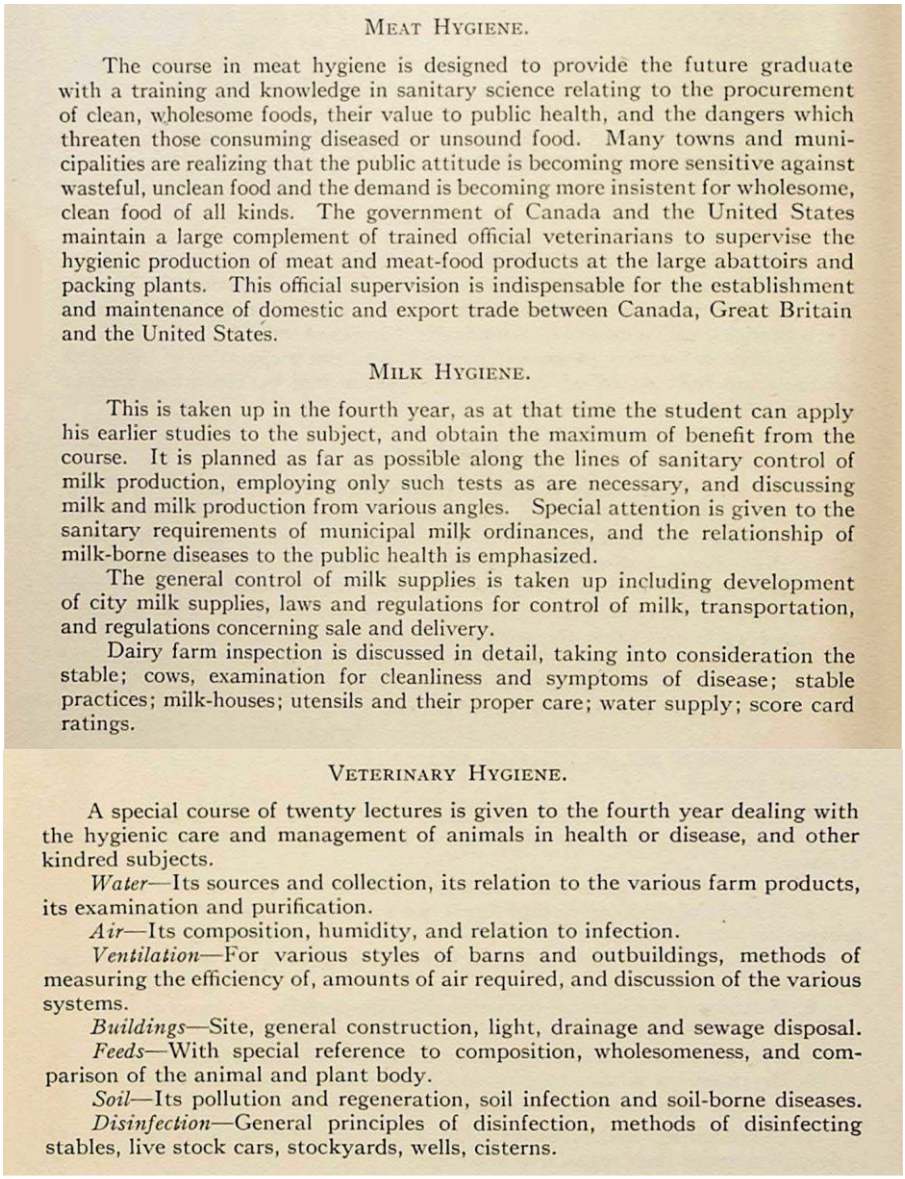
[135] C. D. McGilvray, "Report of the Ontario Veterinary College, 1924," Toronto: The Ontario Department of Agriculture, 1925, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 20.
[136] Thomas Alexander Crerar (Minister of Agriculture), *Parliamentary Debates*, "Canadian Hansard," 13th Parliament, 1st Session, April 16, 1918. https://lipad.ca/full/permalink/505613/.
[137] C. A. V. Barker and T. A. Crowley, *One Voice: A History of the Canadian Veterinary Medical Association* (Ottawa: Distributed by the authors through the Canadian Veterinary Medical Association, 1989), 190.
[138] C. D. McGilvray, "Report of the Ontario Veterinary College, 1919," Toronto: The Ontario Department of Agriculture, 1920, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 5.

health, the role of federal governments in regulating trade and transportation, and the dangers that "diseased or unsound" food could have on local populations and overall public health.[139]

Figure 2.3: Course descriptions for meat hygiene, milk hygiene, and veterinary hygiene from OVC's 1923 annual report



MEAT HYGIENE.

The course in meat hygiene is designed to provide the future graduate with a training and knowledge in sanitary science relating to the procurement of clean, wholesome foods, their value to public health, and the dangers which threaten those consuming diseased or unsound food. Many towns and municipalities are realizing that the public attitude is becoming more sensitive against wasteful, unclean food and the demand is becoming more insistent for wholesome, clean food of all kinds. The government of Canada and the United States maintain a large complement of trained official veterinarians to supervise the hygienic production of meat and meat-food products at the large abattoirs and packing plants. This official supervision is indispensable for the establishment and maintenance of domestic and export trade between Canada, Great Britain and the United States.

MILK HYGIENE.

This is taken up in the fourth year, as at that time the student can apply his earlier studies to the subject, and obtain the maximum of benefit from the course. It is planned as far as possible along the lines of sanitary control of milk production, employing only such tests as are necessary, and discussing milk and milk production from various angles. Special attention is given to the sanitary requirements of municipal milk ordinances, and the relationship of milk-borne diseases to the public health is emphasized.

The general control of milk supplies is taken up including development of city milk supplies, laws and regulations for control of milk, transportation, and regulations concerning sale and delivery.

Dairy farm inspection is discussed in detail, taking into consideration the stable; cows, examination for cleanliness and symptoms of disease; stable practices; milk-houses; utensils and their proper care; water supply; score card ratings.

VETERINARY HYGIENE.

A special course of twenty lectures is given to the fourth year dealing with the hygienic care and management of animals in health or disease, and other kindred subjects.

Water—Its sources and collection, its relation to the various farm products, its examination and purification.

Air—Its composition, humidity, and relation to infection.

Ventilation—For various styles of barns and outbuildings, methods of measuring the efficiency of, amounts of air required, and discussion of the various systems.

Buildings—Site, general construction, light, drainage and sewage disposal.

Feeds—With special reference to composition, wholesomeness, and comparison of the animal and plant body.

Soil—Its pollution and regeneration, soil infection and soil-borne diseases.

Disinfection—General principles of disinfection, methods of disinfecting stables, live stock cars, stockyards, wells, cisterns.

Source: McGilvray, "Report of the Ontario Veterinary College, 1923," 12–13.

[139] McGilvray, "Report of the Ontario Veterinary College, 1923," 12.

The change in course titles from inspection to hygiene prompted a more comprehensive course that emphasized the role of sanitation and cleanliness beyond inspection methods in combatting the spread of disease between animals and humans in the milk and meat industry. It also included more information on sanitary and healthy environments specific to each animal.

During the First World War, veterinarians recognized the need to serve the war effort and distribute quality meat. In their opening address at OVC in 1915, Dr. C. C. James, Dominion Commissioner of Agriculture and Ontario's Deputy Minister of Agriculture from 1891–1912, and Dr. W. Cowan, an early graduate of OVC from Galt, Ontario, and OVA President from 1911–1913, reflected on the role of the meat industry during the First World War, commending Canadian production and veterinary education.[140] Their speech articulated the role of meat consumption compared to population growth, and concluded that human populations were increasing faster than cattle populations in France, Germany, Great Britain, Austria–Hungary, European Russia, Argentina, Australia, New Zealand, the United States, and Canada. An increased population consequently caused a price rise, as demand increased and supply became "scarcer." Despite a lack of supply, these countries were called upon to ship their "so-called surplus across the water to help feed the British and French soldiers."[141] Officials placed a greater importance on the rise of the meat industry than the wheat industry. They outlined that the "ultimate success of the country agriculturally, just as it had been in Scotland, England and Ireland, must be based upon live stock."[142] The escalating prices for cattle and demand for horses throughout the First World War meant that farmers [and presumably also, meatpacking factory owners and owners of large dairies, in addition to the state,] were "more anxious to have veterinarians keep their animals in good condition."[143] This

[140] Grange, "Report of the Ontario Veterinary College, 1915," 13; Barker and Evans, *Century One*, 100 and 94.
[141] Grange, "Report of the Ontario Veterinary College, 1915," 13.
[142] Grange, "Report of the Ontario Veterinary College, 1915," 13.
[143] Barker and Evans, *Century One*, 110.

early recognition of the connection between food quality and public health was paramount, though it was not the only skill that veterinarians provided to the war effort.[144]

Veterinary services were not only crucial for the distribution of healthy food during the war, but also to encourage farmers to "build up a good general farming community" where they could feed good crops grown in local fields to produce "the best kinds of livestock."[145] In recognition of veterinarians' contributions to the war effort, in 1915, an arrangement was made between the Canadian Army Services and the University of Toronto to allow veterinary students to attend the Officer Training Corps at the university. Seventy-five students embarked on this "preliminary military training."[146] Not yet called to the frontlines, the Dominion Commissioner of Agriculture pointed out that there was "a great question and a great responsibility" "looming before[them]," "no matter what part of the continent [they] may go to. The training [they were] getting at [OVC] [was] for the purpose of fitting [them] to do [their] part in building up the great live stock industry of this country."[147] In doing so, officials emphasized the important roles of veterinarians who were called to the Front and those who supported the war effort at home and helped to build a modern Canadian economy.

Connecting economic development and national growth to the quality and production of a nation's meat industry provides insight into the external motivations that encouraged OVC administrators to focus on developing courses and laboratory facilities to prepare veterinarians to meet this demand. Interestingly, in this speech, Drs. James and Cowan articulated the average amount of meat consumed globally: 120 pounds in Great Britain, 113 pounds in Germany, 80 pounds in France, 70 pounds in Belgium, 64 pounds in Austria-Hungary, 50 pounds in Russia, with

[144] Grange, "Report of the Ontario Veterinary College, 1915," 30.
[145] Grange, "Report of the Ontario Veterinary College, 1915," 14.
[146] Grange, "Report of the Ontario Veterinary College, 1915," 7.
[147] Grange, "Report of the Ontario Veterinary College, 1915," 14.

175 pounds in Canada, 186 pounds in the United States, and 260 pounds in Australia.[148] The speakers attributed a greater amount of meat consumption to the "wealth, strength, and development" of each country.[149] These connections also highlight how industrialization gained momentum in the lead-up to the First World War, then accelerated after the war. These factors not only transformed the food consumption landscape, but also increased the veterinary profession's authority.

Cheville argues that following the American Civil War, an increase in education and training mandates for veterinarians signalled recognition of their importance by the government.[150] Accordingly, the United States Army implemented an order in 1879 requiring military veterinarians to have a formal education from a veterinary institution; this was essential to limit the spread of disease and maintain the horsepower they had grown to rely on.[151] The U.S. Department of Agriculture's Bureau of Animal Industry supported training initiatives to meet demand for veterinarians' research and inspection services as well.[152]

The Canadian government also recognized the need for veterinarians' services during the First World War, which helped to accelerate the professionalization of veterinary medicine while standardizing veterinary education and experiential training. With an increased demand for knowledge of veterinary medicine, Canadian veterinarians serving within the British Army and as part of the Canadian Army Veterinary Corps were in high demand. Following the war, government officials recognized that veterinarians' general knowledge of public health and diseases (including zoonotic diseases such as glanders), sanitary and hygienic practices, and their ability to recognize and

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148 Grange, "Report of the Ontario Veterinary College, 1915," 31.
149 Grange, "Report of the Ontario Veterinary College, 1915," 31.
150 Cheville, *Pioneer Scientists and the Great Animal Plagues*, 59.
151 Louis A. Merillat and Delwin M. Campbell, "Private Veterinary Education," in *Veterinary Military History of the United States: With a Brief Record of the Development of Veterinary Education, Practice, Organization and Legislation* (Kansas City, MO: Haver-Glover Laboratories, 1935), 31, as found in Cheville, *Pioneer Scientists and the Great Animal Plagues*, 60.
152 Cheville, *Pioneer Scientists and the Great Animal Plagues*, 59–60.

contain outbreaks of disease quickly, were crucial to maintaining the effectiveness of Allied war efforts. Indeed, their skills were a vital and indispensable aspect of the war effort. This recognition helped to elevate the profession—one that could obviously serve both national and provincial interests.[153]

Domestically, the veterinary profession relied on a reciprocal relationship with farmers. Farmers depended on the expertise of veterinarians, who relied on farmers' outreach to gauge and solve new livestock health challenges. However, the growth and development of the veterinary profession did not solely serve farmers, but also served meatpacking and milk producers, as well as the state. Since Andrew Smith began his animal health lectures in Ontario in 1862, the profession has emphasized the connection between veterinarians and their civil duty or service to meet the demands of livestock health. Administrators at OVC felt a duty to provide "the kind of education which is demanded by the public."[154] Many veterinarians went on to serve in government positions, helping to standardize and endorse veterinarians' skills. Professors and those hired by the government as veterinary inspectors travelled throughout Ontario and globally to better understand the spread of disease and how outbreaks developed within shared environments. This travel was more informal early in OVC's establishment. However, these calls became more formalized in the early twentieth century as veterinarians organized.

The Inclusion of Experiential Fieldwork

In the late eighteenth century, Claude Bourgelat, founder of the Royal Veterinary School in Lyon, France, sought to attract students of human medicine to his veterinary school, just as Canadian institutions did so at the turn of the twentieth century when they appealed to those with the highest

[153] Barker and Evans, *Century One*, 110.
[154] Grange, "Report of the Ontario Veterinary College, 1912," 16.

academic standards.[155] However, Bourgelat recognized that enrolment would be limited as the economic benefits were greater for practicing human medicine than for treating animals. Although he condemned the generational experiential learning undertaken by shoesmiths and farriers at the time—considering this approach "backward and inefficient"—he recognized that for his work to affect the way animal healthcare and veterinary medicine was practiced, he would need to appeal to those who worked with livestock every day.[156] Therefore, despite his initial wish, he admitted the sons of farmers and farriers to the school, where they could learn a combination of "theory, philosophy, as well as hands-on practice."[157] Unfortunately, it took early Canadian veterinarians over half a century to reach the same conclusion. Still, veterinarians' perseverance allowed OVC to flourish and gain professional veterinary authority throughout the early twentieth century.

After years of protesting the practices of experiential experts, OVC finally recognized the value of experiential learning in 1912. In his annual report, Principal Grange stressed the importance of learning "the kind of work" that a recent graduate would be faced with when they embarked upon the "duties of his chosen profession; when as it were, he makes his bow to the public as a full-fledged veterinarian."[158] Following advocacy by opposing veterinary schools and other provincial associations, veterinarians started to see inconsistencies within the profession itself. As a result, Grange maintained the need to standardize examinations across different colleges and professional boards. He explained that livestock health needs in one environment may significantly differ from those in another, which meant that an examiner may unreasonably fail a candidate if they chose to focus on a set of questions that a student who trained at a different college would not be familiar with. Thus, in 1912, OVC formalized the role of practical training in addition to lectures and

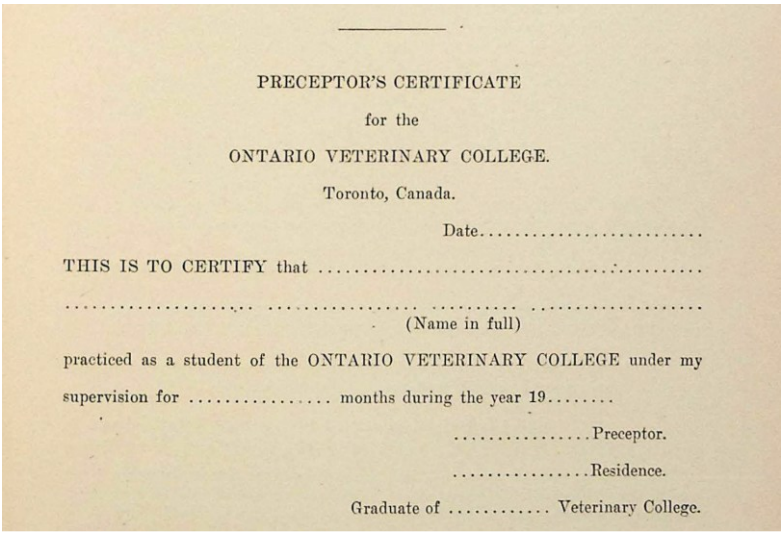
[155] Many human medical schools at the time offered elective veterinary courses.
[156] Generational experiential (or vernacular) knowledge refers to the passing down of skills and knowledge through families. Jones and Koolmees, *A Concise History of Veterinary Medicine*, 105.
[157] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 105.
[158] Grange, "Report of the Ontario Veterinary College, 1912," 16–17.

laboratory work by adding a fieldwork component during the summer months. Ironically, OVC was adding the experiential knowledge they had previously denigrated. Though McEachran would have disapproved of this type of combined academic and experiential training, making this change allowed OVC to respond to criticisms of its curriculum and gain respect from those who valued experiential and practical learning. This change in course ultimately helped OVC overcome challenges to their authority posed by experiential practitioners.

Grange established this fieldwork experience in an official capacity by insisting that a student's preceptor sign off on their fieldwork experience over the summer months (Figure 2.4). This teaching method, Grange argued, was in line with law and medical schools at the time. Students at OVC were now required to pass their written exams and receive written approval from a preceptor to graduate, or their diploma would be withheld "until an approved certificate [was] provided."[159] Though it wasn't acknowledged in OVC reports at the time, this form of experiential learning not only helped practicing veterinarians keep up-to-date with advances in veterinary medicine, but also established a continuing relationship with the college.

[159] Grange, "Report of the Ontario Veterinary College, 1912," 18.

Figure 2.4: Certificate for the verification of practical field work experience under the supervision of a qualified veterinarian



PRECEPTOR'S CERTIFICATE

for the

ONTARIO VETERINARY COLLEGE.

Toronto, Canada.

Date.....

THIS IS TO CERTIFY that .....

....

(Name in full)

practiced as a student of the ONTARIO VETERINARY COLLEGE under my supervision for ..... months during the year 19.....

.....Preceptor.

.....Residence.

Graduate of ..... Veterinary College.

Source: Grange, "Report of the Ontario Veterinary College, 1912," 17.

In addition to fieldwork requirements for students graduating with a diploma in veterinary medicine, OVC's annual report outlined changes to the *Veterinary Surgeon's Act* in 1912. Students of veterinary surgery were now also required to pass their written exams at OVC, pay a $25 fee, and "produce a veterinary preceptor's testimonial certifying that he has practiced veterinary surgery for at least six months, or in lieu of said testimonial a statutory declaration certifying that the applicant [had] practiced veterinary surgery for at least one year after graduating from such Veterinary College." The amended Act also implemented a "penalty not exceeding $100, and not less than $25" for anyone who falsely proclaimed the status of a veterinary surgeon and misled those seeking veterinary services.[160] In doing so, the Act upheld the government and college administrators' desire to meet society's demand for animal health knowledge and set the foundation for future policies that standardized who could practise veterinary medicine, gradually encouraging enrolment in institutional training.

[160] Grange, "Report of the Ontario Veterinary College, 1912," 24.

To further experiential learning from practical fieldwork, Grange also started an essay competition for first- and second-year students. Students had to describe a livestock health dilemma they had faced during their experiential fieldwork, and the winners would have their tuition costs reimbursed.[161] The winning essays, which were published in the annual report to the Minister of Agriculture, affirmed the importance of OVC's work and its role in supplying practitioners who could meet farmers' demands and the province's livestock health challenges.

In 1912, the winning first-year essay was "An Obscure Case of Colic."[162] The winning second-year student described their encounter with anthrax, a fatal zoonotic disease further explored in Chapter 4. The student provided a detailed history and scientific understanding of the disease and its effects on young and old animals before noting common mistakes in diagnoses, preventive treatments, and Pasteur's method of making and inoculating an animal with the anthrax vaccine. The student went on to explain their experience, the environment, the method of diagnosing, and their interaction with the farmer who solicited their services.[163] After making this journey alone, the student returned to report their experiences to the preceptor who confirmed that there had been "several outbreaks of anthrax in that neighbourhood some years ago" before confirming their diagnosis.[164] However, the next day the farmer informed them that the cow had died. The student then provided a detailed description of a post-mortem exam they conducted the following day, the cautionary sanitary and disposal measures taken, and the inoculation of the remaining herd. Finally, the student outlined the number of vaccinations they disseminated over the summer before concluding that they "believed] from early inoculation and proper disposal of carcasses that the disease [could] be handled with small percentage of losses."[165] This detailed essay highlighted the

[161] Grange, "Report of the Ontario Veterinary College, 1912," 18–19.
[162] Grange, "Report of the Ontario Veterinary College, 1912," 8–10.
[163] Grange, "Report of the Ontario Veterinary College, 1912," 11–13.
[164] Grange, "Report of the Ontario Veterinary College, 1912," 14.
[165] Grange, "Report of the Ontario Veterinary College, 1912," 15.

importance of practical training to college administrators, board examiners, and students looking to practise in the field. By addressing a common and fatal animal health problem, the student essay also emphasized the importance of veterinarians' work.[166] The essay competition came to an end in 1916 during the First World War, with many OVC students enlisting so they could provide their services and health knowledge to support the war effort.

Post-war, the veterinary profession underwent a significant transformation. The return of veterinarians to a changed society marked a dramatic shift toward regulation, professionalization, and the practice of veterinary medicine. W. J. R. Fowler, a renowned veterinarian who graduated in 1899 before working as a consultant, lecturer, and surgeon at OVC for fifty-two years, recorded that in February 1917, the Veterinary College Hospital was "full with thirty horses in for treatment," by August 1920, he found himself busy building cages for dogs and cats in his journal because the hospital had become filled with dogs and cats.[167] The small animal field was previously "sneered at," but by 1920, was quickly becoming an area of focus in urban environments despite the viewpoint of C. D. McGilvray (principal of OVC) who, as discussed in Chapter Five, prioritized veterinarians role in public health and food production over small animal practices.[168]

A new affiliation between OVC and the University of Toronto in 1919 increased admission requirements and integrated standards, with graduates receiving a Bachelor of Veterinary Science instead of a diploma.[169] At the same time, the OVA advocated for the *Veterinary Science Practice Act*, a crucial step toward regulating and licensing the practice of veterinary medicine.

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[166] Other essays from 1913–1915 focused on issues commonly faced by practising veterinarians (for example, tenotomy for perforatus in anterior tendons, septic arthritis, parturition, perforated muscles in inferior thirds, pyaemia in a gelding, and an operation to remove the salivary calculus in stenon's duct in a working horse). Grange, "Report of the Ontario Veterinary College, 1913," 20–28, "1914," 20–25, and "1915," 18–21.
[167] Fowler, "Diary (m/fiche) of Dr. Fowler, Professor of Domestic Animal Surgery at OVC, 1908–55,"; Barker and Evans, *Century One*, 162.
[168] Barker and Evans, *Century One*, 162.
[169] McGilvray, "Report of the Ontario Veterinary College, 1919," 5.

People who committed to formal, institutional training sought to establish a higher standard for veterinary practice in Ontario. Though government officials worked alongside OVC to develop the curriculum, the government was hesitant to condemn experiential practitioners throughout the early twentieth century, recognizing the services they offered in rural communities. However, as I discussed in Chapter 1, students at OVC petitioned the Government of Ontario, arguing that investing their time and money in pursuing an institutional degree was absurd when they could work as veterinarians after obtaining a diploma or certificate from the London Veterinary Correspondence School, with much less invested.[170] In 1920, the *Veterinary Science Practice Act* finally resolved some of these issues by defining veterinary science and insisting that future veterinarians needed professional training from a recognized institution.[171] However, in an effort to acknowledge those who had worked in rural communities, a clause allowed experiential practitioners who had made a living without institutional training to continue their work practicing.[172] Ontario's Veterinary Practice Board questioned this clause and the integrity and ethical standards of their work. Nevertheless, various amendments were made that allowed sixty-six experiential practitioners to continue working as a "veterinary surgeon."[173]

As with the introduction of any new law, a period of uncertainty followed the 1920 Act. After fifty years of the push to standardize institutional veterinary training, those practising without attending an accredited veterinary institution eventually found themselves unable to offer veterinary services. Most notably, graduates of London's Veterinary Correspondence School were outlawed after long being "an irritation to the profession inside and outside the province." The school closed

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[170] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1920; Barker and Evans, *Century One*, 107, 112, and 128.
[171] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1920; Barker and Evans, *Century One*, 74 and 113.
[172] O. P. A. Ferguson Papers, Agriculture Department, 1926.
[173] A collection of these amendments, each of which addressed individuals grandfathered into continuing their practices, was reprinted in Barker and Evans, *Century One*, 424–429.

in 1921.[174] Many local experiential experts, like farmers who specialized in animal husbandry within their rural environment, were prosecuted for continuing to practise without institutional training. Others were grandfathered into the Act following approval from a provincial board of regulators based on their past experiences. However, the Ontario Veterinary Association (OVA) challenged many of these instances, refuting the services of many who had not trained at OVC.[175] Reports from 1921 indicate that the Veterinary Practice Board granted 576 people the Veterinary Science Practice Certificate (Form 1), given to graduates of OVC or colleges that met the same standards, and only granted sixty-three people the Veterinary Practice Certificate (Form 2), awarded to non-graduates who had established practice for "five years previous to the Act."[176] Though many thought the 1920 *Veterinary Science Practice Act* would solve problems related to accreditation and standardization of veterinary medicine, this was not necessarily the case.

The 1920 Act also caused issues related to grandfathering practitioners who did not hold a diploma or degree from OVC. In addition, OVA challenged the Veterinary Practice Board's acceptance of farmers as members. Veterinary historians note that some practitioners were given authority to practise veterinary medicine even if they had not practised "habitually" but rather "only occasionally" for the five years prior, which the Act outlined must occur for someone to receive the designation.[177] This issue was further exacerbated when OVA and OVC considered the consequences of 'unqualified' practitioners distributing and farmers administering drugs themselves.[178] OVC's Principal McGilvray strove to prove the efficacy of veterinary standards by increasing OVC's research and extension work in the 1920s in an effort to build a bridge directly from OVC research services to farmers facing livestock health problems. McGilvray sought to prove

[174] Barker and Evans, *Century One*, 127.
[175] Barker and Evans, *Century One*, 127–140.
[176] Form 1 and Form 2 for "Veterinary Practice Certificate," reprinted in Barker and Evans, *Century One*, 134–135.
[177] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1920; Barker and Evans, *Century One*, 134.
[178] I discuss the administration of the live culture vaccine for contagious abortion in cattle in the final chapter.

that OVC's graduates were best equipped to deliver treatments and disseminate preventive information to satisfy livestock health concerns.

Several years later, professional veterinarians sought a legal mandate for licensing through OVA that had voluntarily existed for decades, similar to licensing standards for human medical doctors at the time. Professor of veterinary jurisprudence Dyce W. Saunders provided legal assistance to OVA's legislative committee in 1923 as it prepared a Bill for the Minister of Agriculture. The Bill proposed an amendment to the *Veterinary Science Practice Act* of 1920 to "place the granting of certificates to practice under the control of the Association and … require all practicing veterinarians in Ontario to register in the Association."[179] However, the government continued to oppose self-regulation by the profession throughout the 1920s. In its annual reports, OVC's president regularly documented events where the college worked alongside OVA to uphold a high standard of practice. Despite OVC's and OVA's collaborative efforts to regulate licensing for the profession and further standardize veterinary practices, this amendment did little to solve every regulation and licensing problem.

The implementation of the *Veterinary Science Practice Act* in Ontario eventually led to the demise of London's Veterinary Correspondence School in 1921; however, other popular experiential training programs continued to pose problems for professional institutions. In 1926, a "quack educational school," the Frank B. Graham Scientific Breeding School, established in 1909 in Garnett, Kansas, held a five-day course in Toronto. In this course, Graham claimed that he could instruct farmers on "simple, practical methods for curing breeding troubles in cows."[180] Though the

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[179] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1931, Chapter 44, 148–150, as reprinted in Barker and Evans, *Century One*, 438–440; Government of Ontario, *An Act to Amend the Veterinary Science Practice Act*, 1933, Chapter 66, 239–241, as reprinted in Barker and Evans, *Century One*, 441–443; Barker and Evans, *Century One*, 171.
[180] William A. Gephart, "50th Anniversary Celebrated by Grahan Breeding School," *The Florida Cattleman and Livestock Journal* XXIV, no. 5 (February 1960): 20. https://ufdcimages.uflib.ufl.edu/AA/00/06/22/24/00063/00063.pdf; Frank B. Graham, "Graham Scientific Breeding School," Pamphlet, *Graham Scientific Breeding School* (1932): Cover Page, Accessed November 21, 2024. https://www.ebay.com/itm/186234854017; Barker and Evans, *Century One*, 132.

London Veterinary Correspondence School promised to deliver a complete and thorough education, Graham's school offered a short, specialized course on an important problem facing farmers. OVA contested this course with the Minister of Agriculture, citing the 1920 Act.[181] However, the Act only "covered courses in veterinary science for which fees were charged and certificates or diplomas granted." Graham received compensation from farmers who attended his courses and applied his treatments for breeding chronic, barren cows.[182] However, as a result of the 1920 Act, Graham did not issue a certificate at the end of the course.[183] Rather, it is evident that on some occasions, a photograph of all course attendees was taken.[184] Graham's school travelled around the United States holding five-day courses throughout the country and also provided instructions for farmers in Prince Edward Island.[185] However, if his treatments were not working on the student's home farm, the school would send an instructor to support breeding efforts. If the farmer did "not get satisfactory results [the school would] refund tuition and carfare."[186]

The 1920 Act meant that veterinarians could be certified; however, as the profession realized over the next decade, certification did little to protect professional veterinarians.[187] In 1928, OVA took legal action against the Graham school, and finally, in 1931, the Act was amended:

> the word "or" was substituted for "and": that is, courses in veterinary science for which fees were charged *or* certificates granted were forbidden without authorization from the Minister, and [the Minister

[181] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1920.
[182] Graham, "Graham Scientific Breeding School," Pamphlet (1932): 4.
[183] Barker and Evans, *Century One*, 132.
[184] Bert's Photography Studio, Kansas City, Missouri, "Graham's Scientific Breeding School," January 8, 1917, Lorne Shields Historical Photograph Collection, Toronto Metropolitan University Archives & Special Collections, 2008.002.1476; "Picture Graham Scientific Breeding School Newark, NJ," *Newark Photo Studios*, (1939). Accessed November 21, 2024. https://www.ebay.com/itm/334246154331.
[185] Gephart, "50th Anniversary Celebrated by Grahan Breeding School," 20; "Thompson, Gordon Max," Historical MLA Bios, Legislative Assembly of Prince Edward Island, 195. https://www.assembly.pe.ca/sites/www.assembly.pe.ca/files/Historical%20MLA%20Bios/T.pdf; Graham, "Graham Scientific Breeding School," Pamphlet (1932): Back Cover; Frank B. Graham, "Graham Scientific Breeding School: How to Make Barren Cows Breed, for Breeders and Herdsmen Only," *Graham Scientific Breeding School* (1930 and 1931): Back Cover. Accessed November 21, 2024. https://www.dealswins.com/detail/284333152223.
[186] "Graham Scientific Breeding School," Pamphlet (1932): Cover Page.
[187] Barker and Evans, *Century* One, 170.

> of Agriculture] might give this authority only after the Veterinary Practice Board had shown that the courses were equal in standards of admission and instruction to those of the Ontario Veterinary College.[188]

In 1931, the Act was updated with eight amendments and five new clauses. The new Act recognized OVA's authority to issue certificates to practice veterinary medicine and its power as governing body to self-regulate, which included fixed admission regulations and an annual membership fee. The Minister of Agriculture no longer revoked certificates related to offences or unpaid fees and the clause allowing experiential practitioners with five years of experience was removed. However, it continued to allow experiential experts to practice birthing, castration, spaying, and dehorning.[189] In 1933, Graham's school sought to return to Toronto, but was met with legal opposition. An amendment in 1933 forbade practitioners who had been "grandfathered" under the 1920 Act from using the title "doctor," required them to disclose that their certificate was issued under the earlier 1920 legislation, and granted the Lieutenant Governor in Council to "make legislation governing the [Veterinary Practice] Board, the registrar, appeals from the Board decisions, and any other matters" carried out in the amended Section 9.[190] However, a different clause became an issue for those challenging the Graham school. To "allay the fear of farmers," the 1920 Act had "exempted ailments regarding the parturition [or birthing process] from the definition of 'veterinary science.'"[191] Therefore, Graham, once again, successfully defeated the legal challenge, allowing experiential practitioners to assist in livestock breeding and birthing practices. Despite professional veterinarians'

[188] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1931; Barker and Evans, *Century One*, 133.
[189] Government of Ontario, *An Act Respecting the Practice of Veterinary Science*, 1920.
[190] Government of Ontario, *An Act to amend The Veterinary Science Practice Act*, 1933; Barker and Evans, *Century One*, 175–176.
[191] Barker and Evans, *Century One*, 133.

efforts to condemn the "quack" course that offered experiential knowledge and support to livestock breeders, the Graham school still offers classes to this day in Kansas.[192]

Professional veterinarians' pursuit of authority took a non-linear path. After years of reluctantly working alongside popular animal health knowledge producers in the late nineteenth century, professional veterinarians sought to separate themselves by introducing new curriculum, specialized courses, and experiential training to gain authority and marginalize the efforts of experiential practitioners. This movement led to the professionalization of veterinary medicine being shaped by the hands-on, practical approaches previously associated with so-called "quack medicine." With the growth of livestock farming that followed the First World War, OVC further established the profession's authority and responded to farmers' changing demands as a result of the growth in livestock farming. In addition to adapting the curriculum to attract more students, OVC expanded its research services and laboratory facilities to serve farmers better, as shown in Chapter 5. The adoption of new standards and advocacy efforts to standardize regulations also served to expand the veterinary medicine profession in the early twentieth century. Changes in the animal–human relationship as a result of an increasingly industrialized economy after the First World War into the 1930s, as well as changes in livestock health practices that corresponded with anthropocentric values, served to diversify the veterinary profession even further. This diversification reflects the transition from small, individual farms to large, herd farms and animals' role in human companionship and leisure activities.

Some veterinary graduates went on to serve in a civic capacity, helping to enforce and develop livestock health regulations, promote standards, and work to maintain the health of livestock they relied on.[193] Veterinarians continue to advise the state in regulating how humans

[192] "Graham School," Garnett, Kansas. Accessed November 21, 2024. https://grahamschoolforcattlemen.com/index.
[193] Conversations about animal industries, the quality of animal nutrition and, more recently, the impact that relying on animals for sustenance has had on the climate, are all connected to the state's regulation of animal life and health.

interact with animals and how the state regulates different animal-based industries today. In the Chapter Four, I examine efforts by the veterinary profession throughout this period to advance veterinary science by working collaboratively with experiential practitioners and government officials to help combat fatal, contagious zoonotic diseases and the contamination of food sources. I also examine how provincial veterinary officials worked with institutions to disseminate regulations and practices to farmers in an effort to prevent the spread of zoonotic disease in Canada.

Chapter 3: Practising and Dismissing "Quack Medicine": The Evolution of Pharmaceutics in Animal Healthcare in Southern Ontario

Antique medicine bottles can be found in museums, old buildings, and among amateur and professional collections. Is it the ornate features that people cherish, the fact that they represent medicines that were valued by many rural families at the time, or simply because they were left behind for future generations to discover? Whatever the reason for wanting to collect and preserve these glass bottles, the story behind them—of conflict and division; of overlap and similarity—is illuminating, and the focus of this chapter.

The bottles were manufactured to hold home remedies and patent medicines, many of which were dismissed by some in the veterinary profession as being nothing more than "snake oil" or "quackery."[1] The substances were produced and used in southern Ontario from the 1870s to the early 1930s, and were administered by farmers, experiential practitioners, and professional veterinarians. An example of this were medicines produced by the Fleming Brothers, chemists in St. George, Ontario, which were widely advertised and administered by both farmers and veterinarians, yet condemned by other professional veterinarians.

Other medicines were actually produced by professional veterinarians, such as Dr. George Bell. A graduate of the Ontario Veterinary College (OVC), Dr. Bell operated in this grey area of commercialized, mass-produced, and mass-marketed veterinary medicine. He created and manufactured various formulas in Kingston, Ontario. The most popular of his remedies was Dr. Bell's Wonder Medicine, which was still sought after throughout the twentieth century and whose bottles have been preserved by many museums (Figure 3.1).

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[1] Home remedies refer to substances or recipes for medicines prepared and administered by farmers and people in rural communities. Snake oil is defined as a substance that is sold as a medicine, "but that is not really useful or helpful." "Snake oil," *The Britannica Dictionary*. https://www.britannica.com/dictionary/snake-oil. Veterinarians, doctors, and historians of both professions, use the term "quackery" to refer to fraudulent practices by people who purposefully recommended deceitful treatments. "Quackery," *Encyclopedia Britannica*. https://www.britannica.com/science/scientific-method.

Figure 3.1: Bottles of Dr. Bell's Wonder Medicine housed in the Museum of Health Care at Kingston (left) and in the United Farmers' Historical Society Archives in Calgary (right), plus a photo of packaged bottles published by a New Zealand newspaper in 1960 (centre)

Source: "Weekly Photo Challenge," Accession #996001342, Museum of Healthcare at Kingston—Blog, November 15, 2011. https://museumofhealthcare.blog/weekly-photo-challenge-wonder/; "Dr. Bell's Veterinary Medical Wonder," Artifacts Collection, United Farmers Historical Society Archives. https://ufhsarchives.andornot.net/permalink/descriptions10871; "Bottles of Dr Bell's Veterinary Medical Wonder (horse dope) taken from Wanganella," *Evening Post of Wellington*, Reference: EP/1960/0605-F, National Library of New Zealand, February 18, 1960. https://natlib.govt.nz/records/30635106.

C. A. V. Barker and Margaret Evans dismissed efforts of popular veterinary professionals such as Dr. Bell to provide farmers with alternatives to the care offered by other veterinarians, who were relatively scarce in many rural communities in the late-nineteenth and early twentieth centuries.[2] However, their quick repudiation of popular experiential knowledge failed to recognize farmers' basic understanding of livestock health problems, treatments, and practical explanations of medicines in the "simplest English language."[3] Individual practitioners made decisions about which medicines to use based on their own experiential knowledge and the recommendations they received from experiential experts and professional veterinarians. Companies that produced remedies, such as

[2] C. A. V. Barker and Margaret Evans' professional history of the Ontario Veterinary Association, *Century One: A History of the Ontario Veterinary Association, 1874–1974* (Guelph: Distributed by the Authors, 1976), 128.
[3] J. E. Hodgins and T. H. Haskett, *The Veterinary Science* (HH-0009, Museum of Dufferin Archives, Dufferin County, 1907), Earlier Undated Edition, Preface.

the Fleming Brothers' Company, Thomas Fowler and Léon Monsel's solutions, and Dr. Bell's Wonder Medicine Company, sought to fill demand for quick, accessible, and less costly forms of treating common livestock health problems. However, many cure-all formulas were ineffective and consequently became the subject of regulation and a reform movement aimed at protecting consumers. Nevertheless, their instructions provided farmers with methods to quickly identify the source of an animal's suffering and administer treatments, in the hopes of preventing the spread of disease and loss of animal life.

Throughout this chapter, I examine the substances and medicines recommended to both farmers and veterinary students. This analysis reveals circumstances where farmers, experiential practitioners, and veterinarians used the same medicines. It illustrates the similarities between experiential and institutional knowledge that informed how farmers treated livestock and the conflicts that led to the persecution of experiential knowledge. I compare the recipes for remedies (often described as "receipts" in manuals) mixed at home (or medications administered on family farms) in popular animal health manuals with the recipes for medications described in lectures and pamphlets given to students at Ontario Agricultural College (OAC) and OVC. I then trace the development of the commercial drug and patent medicine industry in southern Ontario, with a view to highlighting the similarities and minor differences between experiential and scientific experts' recommendations for treating pain, reducing swelling, and aiding digestion issues. I conclude with a discussion on Dr. Bell's Wonder Medicine, which was very popular with farmers, yet condemned by some institutional veterinarians. Overall, each section focuses on different types of medicine used by Ontario farmers: remedies mixed at home, patent medicines, and, finally, a cure-all medicine produced by a professional veterinarian in Ontario. Each discussion offers a comparative analysis of common treatments recommended by experiential experts and institutional veterinarians from the mid-nineteenth to the early twentieth centuries.

As Chapter One showed, before veterinarians were readily accessible, professional veterinarians worked with popular publishers who distributed experiential knowledge—including tried-and-true and scientific practices. However, there was also significant overlap between experiential and institutional veterinary knowledge of medicines to treat livestock health problems. To understand the overlap and division between experiential and professional knowledge, I examine the various treatments that were recommended to farmers by both popular experiential experts and professional veterinarians throughout the late nineteenth and early twentieth centuries. Farmers, experiential practitioners, and veterinarians themselves often used similar medications to treat livestock. Consequently, the continual struggle for authority over who could administer medications to livestock has shaped the field of veterinary pharmacology.

As the nineteenth century progressed and veterinary science advanced, farmers moved to adopt new methods of livestock healthcare that became available to them. Many veterinary historians have condemned earlier practices, "prosecuting the past in the court of the present."[4] Some historians have also "overlooked [folklore or home remedies] because of historians' general disregard for the anecdotal and unsystematic way in which much of this information was gathered."[5] Some experiential experts and authors of popular livestock health manuals were not necessarily the frauds that professional historians claim they were. Rather, like others with varying levels of professional training, they profited from mobilizing experiential knowledge that filled a vacuum created by demand for better livestock healthcare in rural environments. Many histories of veterinary medicine embrace a celebratory narrative of scientific progress without regard for how vernacular

[4] Lees, Bäumer, and Toutain, "The Decline and Fall of Materia Medica and the Rise of Pharmacology and Therapeutics in Veterinary Medicine," 19.
[5] Owen Davies, "Cunning-Folk in the Medical Market-Place during the Nineteenth Century," *Medical History*, 43 (1999): 55.

practices continued through the turn of the twentieth century or how veterinary pharmacology developed in a non-linear form from centuries of folk remedies.

Like the professionalization of veterinary medicine, the decline of the term Materia Medica also reflects a non-linear path to modern veterinary practices. Initially, Materia Medica was closely associated with treating diseases in horses and the work of "farriers and quacks."[6] Claude Bourgelat applied the term, which was also used in human medicine, to veterinary education at institutions. He wrote the first book on Materia Medica for French veterinary students in 1771.[7] At OVC, the term was used to describe lectures on drug composition and their effects on livestock. However, OVC also consistently used the term in articles and advertisements they placed in *The Farmer's Advocate* after 1877.[8] By 1934, the term "pharmacy" had replaced Materia Medica, which was in slow decline by the turn of the twentieth century.[9] It was last used in 1953 when Meyer Jones, a founder of present-day pharmacology and therapeutics, published *Veterinary Pharmacology and Therapeutics*, making the term "obsolete" (see Table 3.1).[10]

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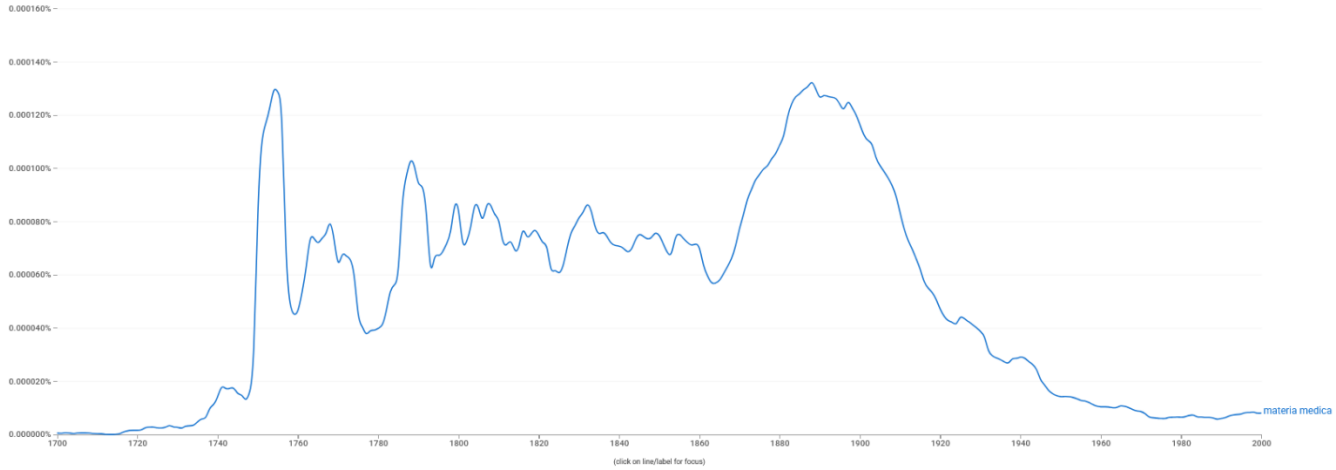
[6] Lees, Bäumer, and Toutain, "The Decline and Fall of Materia Medica and the Rise of Pharmacology and Therapeutics in Veterinary Medicine," 4–5.
[7] Bourgelat, *Matière Médicale Raisonnée ou Précis des Médicamens Considérés dans Leurs Effets, à l'Usage des Élèves de l'École Royale Vétérinaire, avec les Formules Médicinales de la Même École.*
[8] "Ontario Veterinary College," *The Farmer's Advocate and Home Magazine,* XII no. 10 (October 1877), 248. *The Farmer's Advocate* also published the term "Materia Medica" when referring to combatting diseases in humans in 1875. "Lie Down and Rest," *The Farmer's Advocate and Home Magazine,* X no. 1 (January 1875), 14.
[9] George F. O. Sharpe, "Pharmacy," 1934, CA F168-10-14, RE1 OVC A0102, Box 1, File 1.7, George F. O. Sharpe Collection, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 1–2.
[10] Lees, Bäumer, and Toutain, "The Decline and Fall of Materia Medica and the Rise of Pharmacology and Therapeutics in Veterinary Medicine," 2; L. Meyer Jones, *Veterinary Pharmacology and Therapeutics*, 1st ed. (Ames, Iowa: The Iowa State College Press, 1953).

Table 3.1: Ngram graphing the use of "Materia Medica" in Google Books from 1700–2000.

Google Books Ngram Graph – Materia Medica, 1700–2000



Source: An Ngram graph charting the use of the term Materia Medica in Google Books from 1700 to 2000 illustrates this steady incline from 1863 before peaking in 1888 and a steady decline. Jean-Baptiste Michel, Yuan Kui Shen, Aviva Presser Aiden, Adrian Veres, Matthew K. Gray, William Brockman, The Google Books Team, Joseph P. Pickett, Dale Hoiberg, Dan Clancy, Peter Norvig, Jon Orwant, Steven Pinker, Martin A. Nowak, and Erez Lieberman Aiden, "Google Books Ngram Viewer – materia medica," (case-insensitive). Accessed March 10, 2025. https://books.google.com/ngrams/graph?content=materia+medica&year_start=1800&year_end=2022&corpus=en&smoothing=3.

Popular editors, authors, and experiential practitioners regularly experienced opposition to their work and accreditations, as outlined in Chapters One and Two. Despite their efforts to fill the gap between professional veterinarians and farmers, legislation gradually restricted experiential experts' work. However, the popularity of experiential health manuals shows an apparent demand for experiential knowledge of pharmacology. Comparing their recommendations to those in institutional pamphlets and lectures given to veterinary students illustrates the similarities between some experiential and institutional treatment practices through the turn of the twentieth century and the non-linear evolution of veterinary pharmacology.

The institutional sources in this chapter are from the collections of veterinary students who set up private practice in towns across southern Ontario. Students' notes were recorded during

lectures on Materia Medica and sporadic diseases at OAC and OVC in 1885, 1903, 1904, 1914, and 1934. These student lecture notes offer detailed records of substances and recipes recommended by their professors. Like popular manuals at the time, these sources do not provide evidence of specific instances where farmers or veterinarians used home remedies and patent medicines. However, when compared with popular manuals, they provide insight into the overlap between experiential and institutional knowledge that persisted throughout the turn of the twentieth century. Although this chapter reveals similarities between medicines recommended by experiential and institutional practitioners, institutional sources included more extensive knowledge of veterinary science and the use of scientific terms, like Materia Medica.

Materia Medica definitions in veterinary students' lecture notes remained similar during the period of this study.[11] According to C. A. Zavitz's lecture notes from 1885, Materia Medica is divided into four categories based on medicinal actions:

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[11] In lecture notes from OAC and OVC, students defined Materia Medica as "the agents used in the care of disease." C. A. Zavitz, "Materia Medica," Notebook, Spring Term 1885, CA F163, RE1 OAC A0813, Box 1, C.A. Zavitz Collection, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 1. In 1898, J. Hugo Reed, a professor of veterinary science at OAC from 1893–1923, defined it as "Veterinary Materia Medica, or Veterinary Pharmacology, consists of the description of medicines, or drugs, used in the prevention or cure of disease among the domesticated animals. Medicines, although derived from so many sources throughout the animal, vegetable and mineral kingdoms, possess many actions in common, and are prepared for use by the same pharmaceutical processes." J. Hugo Reed, *Short Notes in Veterinary Materia Medica for the Use of Students at the O.A.C.* (Guelph: Kelso, Book & Job Printer, 1898 and 1914), CA F1-23-23, RE1 OAC A0196, Faculty Collection, Ontario Agricultural College Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario, and CA F163, RE1 OAC A0813, Box 3, C.A. Zavitz Collection, Ontario Agricultural College Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario. F. Eugene Gattinger, *A Century of Challenge: A History of the Ontario Veterinary College* (Toronto: University of Toronto Press, 1962), 221. At least seven editions of his Materia Medica manual are available at the University of Guelph Archives & Special Collections: 1898 edition in CA F1-23-23, RE1 OAC A0196, Faculty Collection, Ontario Agricultural College Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario; 1900 and 1915 editions in CA F1-23-24, RE1 OAC A0343, Faculty Collection, Ontario Agricultural College Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario; 1903 edition in CA F1-43-24, RE1 OAC A0983, James N. Allan Collection, Ontario Agricultural College Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario; 1913 edition in CA F1-23-22, RE1 OAC A0692, Faculty Collection, Ontario Agricultural College Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario; 1914 edition in CA F163, RE1 OAC A0813, Box 3, C. A. Zavitz Collection, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario; 1917 edition in CA F1-23-21, RE1 OAC A0694, Faculty Collection, Ontario Agricultural College Fonds, University of Guelph Archives & Special Collection, Guelph, Ontario. This definition held until about 1913, when veterinary student A. R. Colman Jr. defined Materia Medica as "a knowledge of the remedies employed in medicine; includes everything pertaining to drugs." A. R. Colman, "Materia Medica," Notebook, n.d., CA F168-7-45, RE1 OVC A0148, Box 2, File 2.4, A. R. Colman Collection, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 1–2. These lecture notes are from A. R. Colman Jr. and though undated, coincide with his time at OVC. For

I. The manner in which medicines establish their actions.
II. The manner in which medicines are believed to cure disease.
III. The arrangements of medicines according to their physiological actions.
IV. The circumstances which modify the actions of medicines.[12]

His notes describe the differences between topical, local interactions, or remote interactions, such as medicines absorbed through the circulatory system, blood vessels "from the surface of mucous membrane, skin, or other parts," and "solid" medicines "given by mouth," entering "capillary veins which exist in the stomach and intestines."[13] OVC's Materia Medica lectures gave students more detailed, scientific explanations of "the most important drugs and agents used in the cure of disease and the alleviation of pain, including their actions, uses and doses." In addition, students recorded a drug's production and adverse effects on animal bodies. In the early twentieth century, lectures were given in OVC classrooms before the practical component was delivered in a pharmacy.[14] This focus on how drugs act and react allowed veterinary students to understand not only the effects of different drugs, but how and why they should administer substances for different purposes. Farmers, rural settlers, and veterinarians kept limited medical substances on hand. Until veterinary services

example, in this article Andrew Smith was listed as president of OVC, a position he held until 1908, and John G. Rutherford was listed as Canada's Chief Veterinary Inspector, a position he accepted in 1901. A. M. Evans, "Smith, Andrew," *Dictionary of Canadian Biography*, 13 (1994).

[12] Zavitz, "Materia Medica," Spring Term 1885, 1–2.

[13] Zavitz, "Materia Medica," Spring Term 1885, 2–5.

[14] Both quotes appeared in OVC's annual reports to the Minister of Agriculture for 1908, 1911, 1913, 1914, and 1915. E. A. A Grange, "Report of the Ontario Veterinary College, 1908," Toronto: The Ontario Department of Agriculture, 1909, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 11; E. A. A. Grange, "Report of the Ontario Veterinary College, 1911," Toronto: The Ontario Department of Agriculture, 1912, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 18; E. A. A. Grange, "Report of the Ontario Veterinary College, 1913," Toronto: The Ontario Department of Agriculture, 1914, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 34; E.A.A Grange, "Report of the Ontario Veterinary College, 1914," Toronto: The Ontario Department of Agriculture, 1915, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 29; E. A. A. Grange, "Report of the Ontario Veterinary College, 1915," Toronto: The Ontario Department of Agriculture, 1916, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 23.

were readily available in the countryside, farmers worked with a more rudimentary understanding of the same medicines to treat livestock.

A. R. Colman Jr., who graduated from OVC in 1904, wrote that Materia Medica also "includes official and non-official drugs and their preparations." He explained that nearly every country had a "Pharmacopoeia" (a book of descriptions for official drugs).[15] Pharmacopoeias in Britain and France, typically "proposed or declined [treatments] … according to their personal empirical experience or imagination."[16] In Canada, Colman Jr. noted "other drugs [were] frequently used and these are said to be non-official," and some non-official drugs could "from time to time be added to the Pharmacopoeia."[17] He distinguishes between "official and non-official" knowledge, and points to less animosity towards experiential practitioners.

Many authors of popular animal health manuals fought to maintain their right to publish "unofficial" or experiential knowledge of livestock healthcare and treatments. Historians like Lees, Bäumer, and Toutain contend that:

> The evolving sciences were initially retarded by practitioners' (whether qualified or not) reluctance to relinquish the basis of their livelihoods. The scientific revolutions could not be applied optimally until the instrumentation revolution enabled diagnosis of both causes and signs of disease. It was as late as mid-twentieth century that Materia Medica practices were finally replaced by the modern era of pharmacology and therapeutics.[18]

Training veterinarians at institutions took years. Therefore, distributing veterinary services took time, and farmers required immediate access to care for livestock. Many authors of popular animal health

[15] Colman, "Materia Medica," 1–2.
[16] Lees, Bäumer, and Toutain, "The Decline and Fall of Materia Medica and the Rise of Pharmacology and Therapeutics in Veterinary Medicine," 4.
[17] Colman, "Materia Medica," 1–2.
[18] Lees, Bäumer, and Toutain, "The Decline and Fall of Materia Medica and the Rise of Pharmacology and Therapeutics in Veterinary Medicine," 19.

manuals and, later, producers of patent veterinary medicines sought to bridge this divide. Despite their monetary benefit, equipping farmers with more immediate access to tried-and-true treatments and medicines helped farmers overcome livestock health challenges. These businesses excelled because they recognized and met a need for quick access to this knowledge and treatments, unlike many institutionally trained veterinarians.

In this transitional period from the turn of the nineteenth century to the early 1920s, the conflict over knowledge, authority, and power to practise livestock healthcare was mounting—not unlike what was happening in other professions at the time. Calls for higher standards within the profession both in Canada and elsewhere signalled that the standards of practice in the mid- to late nineteenth century were, as Barker and Evans have argued, "unsatisfactory to Ontarians."[19] Speaking at OVC's commencement in 1915, the Honourable William Renwick Riddell, a Justice of the Supreme Court of Ontario, noted that his brother, who attended OVC in the 1870s, experienced "shakings of the head and friendly expostulations at the utter waste of the money paid to learn to be a "horse doctor."" He recalled:

> No one exercising the trade had been scientifically educated [in the past]; the practice was a very bad form of empiricism and quackery, and the worst feature of all was that no one could understand that there was or could be advantage from a knowledge of the physiology of animals or from careful training in scientific principles.[20]

Veterinary medicine was developing in a world of professionalization. Human medicine was advancing and gaining authority faster than veterinary medicine at the time—however, both fields were fighting for power and authority. For example, human doctors were advocating for increased

[19] Barker and Evans, *Century One*, 82.
[20] William Renwick Riddell, "The Graduate and the Country," Address delivered at the Commencement Exercises of the Ontario Veterinary College, Convocation Hall, University of Toronto, April 24, 1915, in Grange, "Report of the Ontario Veterinary College, 1915," 33.

control over the birth of children—taking this authority away from midwives. However, not all of those offering alternative livestock healthcare were necessarily 'quacks,' as has been insinuated by licensed veterinarians at the time and some professional histories. Some had even enrolled at OVC and left before graduating.[21]

Some veterinarians and historians state that the use of "quack medicine" or the treatments endorsed in popular manuals "accentuated the absurdity" of allowing people not trained at an institution to provide healthcare services for a fee.[22] However, Susan Jones and Peter A. Koolmees argue that experiential practitioners' work as "healers cannot … be disqualified as ignorant empiricists or dangerous quacks; after all, their practices were very similar to those of more "educated animal healers."[23] The first director of the American Medical Association's (AMA) Bureau of Investigation, Dr. Arthur J. Cramp focused on the "acts, arts, or pretensions of a quack."[24] Like Cramp, historian Eric Boyle claims that qualified and legally licensed medical experts could also be quacks. However, "accusing someone of being a quack, or dismissing a remedy as quackery, remained an easy task. Proving it was entirely more difficult."[25] During this period, scientific advances came from experimentation and testimonials by word of mouth helped promote or dissuade people from using these treatments.

Historian Zachary Dorner takes this argument further in his study on *Merchants of Medicine*. He notes that continental and local rivalries existed within the chemical and pharmaceutical industry as well.[26] Thomas Corbyn, himself a prominent eighteenth-century "chemist," "druggist," or

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[21] Cox, Curator, Barker Veterinary Museum, Ontario Veterinary College.
[22] Barker and Evans, *Century One,* 112.
[23] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 86.
[24] Eric Boyle, *Quack Medicine: A History of Combating Health Fraud in Twentieth-Century America* (Santa Barbara, California: Praeger), xv.
[25] Boyle, *Quack Medicine*, xvi.
[26] Zachary Dorner, *Merchants of Medicine: The Commerce and Coercion of Health in Britain's Long Eighteenth Century* (Chicago: University of Chicago Press, 2020), 32.

"wholesale apothecary,"[27] dependent on legal or self-stylized records, reproduced and experimented with popular patent medicines, which he called "quack medicines."[28] At the time institutionally trained veterinarians, doctors, and chemists used the term "quack" to discredit their rivals and condemn their work—all to increase their own authority. Yet, the division between experiential and institutional knowledge was not as distinct as some historians have portrayed.

In Canada's frontier, settler remedies were determined by a "hierarchy of resort in dealing with health issues, moving from self-help" to consulting "local health experts" and "professional medicines as a health concern was assessed and acted upon."[29] Settlers drew on folk remedies from their homeland and often relied on Indigenous healing methods before scientific methods became accessible in remote rural communities.[30] As medical historian Megan Davies illustrates, most settlers kept a "doctor's book, a good medical reference book" on hand. Generations of mothers, according to Davies, relied on this book. Like the popular animal health manuals examined throughout this dissertation, these books uncover lay (or experiential) health knowledge trends and some contained treatments for both humans and livestock. Passed down between generations, they provide insight into the remedies kept on hand, both homemade and patent medicines.[31] As general healers, some mothers served as experiential experts, covering the role of "nurse, vet, dentist, and healer" in remote rural communities.[32] However, their "belief systems and health-care practices were as eclectic

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[27] Roy Porter and Dorothy Porter, "The Rise of the English Drugs Industry: The Role of Thomas Corbyn," *Medical History* 33, no. 3 (1989): 286–287.
[28] Dorner, *Merchants of Medicine*, 32.
[29] Megan Davies, "Mother's Medicine: Women, Home and Health in the Peace River Region of British Columbia, Canada, 1920–40," in *Medicine in the Remote and Rural North, 1800–2000*, eds. J. T. H. Connor and Stephen Curtis (London: Pickering & Chatto Limited, 2011 and Routledge, 2016), 207–208.
[30] Davies, "Mother's Medicine," 208–209.
[31] In addition to seeking knowledge and treatments from nearby Indigenous communities, remote settlers purchased patent medicines from Eaton's catalogue. Similarly, farmers purchased patent medicines through subscriptions in agricultural publications and passed them down through generations, as shown elsewhere throughout this dissertation. Davies, "Mother's Medicine," 208–211.
[32] Davies, "Mother's Medicine," 212.

as their materia medica," which according to Davies, extended from "the kitchen, [and] the barn [to] the Eaton's catalogue."[33]

However, despite being general healers, there is little evidence on women's role in livestock health. Doctors, like veterinarians, were responsible for claiming their own authority to practice.[34] However, Boyle argues that in cases of human health, it was women's responsibility to protect their families against "unscrupulous advertisers."[35] One manual argued that "ladies of a household" would value its "multitudinous, so varied, and above all so entirely reliable" information when "perfom[ing] many of their laborious duties in the household economy."[36] As farming transformed into a household business economy, access to and demand for pre-mixed, patent medicines increased. However, as this transition did not occur overnight, farm families lived in a "state of preparedness," which meant relying on their experiential knowledge, general health books, and readily available medical provisions first and foremost, before seeking assistance from veterinarians, who were at the top of the "hierarchy of resort."[37] As the veterinary profession aimed to standardize livestock healthcare practices and condemned those who practised without institutional training, tensions grew between veterinarians and experiential practitioners. However, some experiential and institutional approaches were not as disparate as the veterinary profession claimed.

Home Remedies: Similar Recipes Used by Farmers and Institutional Veterinarians

Home remedies have helped people care for humans and animals for millennia. Experienced livestock farmers had an innate understanding of livestock health, built on years of practical work

[33] Davies, "Mother's Medicine," 213.
[34] Boyle, *Quack Medicine*, 12.
[35] Dan King, *Quackery Unmasked: A Consideration of the Most Prominent Empirical Schemes of the Present Time, with an Enumeration of Some of the Causes Which Contribute to Their Support* (Boston: David Clapp, 1858), 258. https://history-of-obgyn.com/uploads/3/5/4/8/35483599/1858-king-quackery-unmasked.pdf; Boyle, *Quack Medicine*, 12.
[36] J. Gurnley Thompson, *The Domestic Encyclopedia of Facts; or Farmers, Mechanics and Household Manual* (971.36, Simcoe County Archives, 1879), preface.
[37] Davies, "Mother's Medicine," 208.

with their livestock. If they lacked particular expertise, they turned to a more experienced neighbour or to information gleaned from popular publications. Many popular manuals circulating in southern Ontario contained a section on home remedies and listed common solutions that farmers could stock in their homes to treat humans and animals alike. Certain animal-, plant-, or mineral-based ingredients were known to have specific qualities that could limit pain (belladonna or opium) and swelling (lard, mercury, or lead), heal a wound (aconite or arnica), or aid digestion (ginger).

General health books were important to healthcare practices in remote, farming communities before the veterinary profession expanded into these regions. In Ontario, these publications, similar to France's early approach, valued experiential knowledge. Their authors believed farmers were often capable of administering effective livestock healthcare. *The Domestic Encyclopedia of Facts; or Farmers, Mechanics and Household Manual*, published in 1879, was a popular reference manual for farmers. The book claimed to "illustrate the rapid and valuable improvements in stock-raising during the past decade" and to be of "inestimable value" for both men and women.[38] It respected new livestock health practices and claimed that recent advancements would help farmers prosper. The manual also offered advice on when it was necessary to call for a "well-informed," "educated," "accomplished," "practiced," "experienced," and "professional" veterinarian who exhibited "skill and tact." It also published veterinary surgeons' recent advances and outlined the circumstances that continued to "puzzle" the profession.[39] The manual's author, J. Gurnley Thompson, was not necessarily dismissive of institutional training, unlike those who criticized book learning. However, he, like many farmers, valued experiential knowledge first and foremost. He also acknowledged when farmers should call for an institutionally trained professional to treat major health issues that farmers may not have experienced before. Therefore, although many farmers and

[38] Thompson, *The Domestic Encyclopedia*, preface.
[39] Thompson, *The Domestic Encyclopedia*, 55, 59, 62, 72, 79, 80, 85, 89, and 78.

popular authors predominantly valued experiential knowledge, they also recognized when professional veterinarians would be more knowledgeable in treating an uncommon ailment.

Thompson organized his manual according to illness and injuries, noting the preferred method of administering medicines.[40] In comparison, OVC organized its course on Materia Medica according to the composition and reactions that students were required to apply in other courses that explored specific livestock health issues in greater detail. Classes on Materia Medica focused on descriptions of substances before their "mode of action" and preferred state of application. Though this in-depth manner of studying veterinary science was preferable at institutions, it was not accessible for many farmers.

As discussed previously, Thompson's *The Domestic Encyclopedia* (1879), Gardenier's *The Successful Stockman and Manual of Husbandry* (1903), Hodgins and Haskett's *The Veterinary Science* (1907), and other similar manuals were criticized by professional veterinarians and some farmers as products of book farming, created by those who prioritized monetary gain over knowledge. However, they offered farmers access to the fundamentals of veterinary science, including pharmaceuticals, through broad networks of experiential knowledge exchange. A case in point is spavin, a common degenerative ailment affecting the hock joint in working horses' hind legs. In Chapter One, we saw that William Standen sought a local veterinarian's help for an advanced case of spavin, which had caused lameness.[41] Spavin regularly affected horses throughout the nineteenth and twentieth centuries and became the focus of many patent medicines (discussed later in this chapter). Treatments remained similar throughout the turn of the twentieth century and few changes were

[40] On the manual's title page, Thompson's name is followed by "A.M." This designation does not appear to be medical in nature. It is possible this designation refers to "Artium Magister" or Master of Arts. Throughout the manual, he relies on "months of intense application, study and research" and "artistic and elegant illustrations" to provide "valuable" information. Thompson, *The Domestic Encyclopedia*, preface.

[41] William Standen Diary, July 12, 1895, 87-006/001(06), William Standen Fonds, Trent University Archives, Peterborough, Ontario. https://archives.trentu.ca/index.php/87-006-001-06.

made as veterinary authority grew.[42] Both experiential experts and veterinarians stated that the disease should be recognized in its early stages before its advanced manifestation made recovery impossible. To treat bone spavin, a form of osteoarthritis "or the final phase of degenerative joint disease (DJD), in the lower three hock joints," Thompson outlined in his manual that "cure or alleviation is possible only in the first stages of the disease," so quick recognition was imperative.[43] Like early twentieth-century OVC professors, he recommended that the horse should be allowed rest.[44] Then, he instructed owners to bathe the horse "promptly and perseveringly" by placing the foot "into a bucket of warm water, which should be applied with a sponge to the locality of inflammation."[45] If the horse was clearly in pain, showing signs of "general uneasiness and constant movement of the limb," he recommended applying a "poultice," "moistened freely with a mixture composed of equal parts of the tinctures of aconite root, opium, and belladonna" and "the application of a mixture of one part chloroform and two parts sweet oil may act as a revulsive."[46] After the horse had stopped experiencing "pain" and "tenderness" "with only swelling remain[ing]," he recommended "an ointment of one part of the iodide of lead with eight parts of lard," to remove any remaining swelling before the horse could be "gradually" reintroduced to work.[47] Thompson warns readers that they must treat spavin quickly and regularly or "prolonged lameness" and the

[42] In Ontario, advertisements for treating bog and bone spavin existed in many agricultural periodicals and newspapers. For example, Fleming Brothers, Chemists distributed a well-advertised patent medicine.
[43] "Bone Spavin Fact Sheet," The Dick Vet Equine Practice, Easter Bush Veterinary Centre, The University of Edinburgh, https://www.ed.ac.uk/sites/default/files/atoms/files/bone_spavin.pdf (Created: January 14, 2010, Modified: October 29, 2020); Thompson, *The Domestic Encyclopedia*, 52.
[44] J. S. Shepherdson graduated from OVC in 1915 before practising in Markdale, Ontario, about 100 kilometres north of Guelph, until 1926, when he transitioned to Inspector for the Health of Animals Branch in Kingston until his retirement in 1959. J. S. Shepherdson, "Sporadic Disease Horse," January 27 and 30, 1914, Year 3, RE1 OVC AO122 Box 1, File 1.3, J.S. Shepherdson Papers, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 27–29.
[45] Thompson, *The Domestic Encyclopedia*, 52.
[46] Thompson, *The Domestic Encyclopedia*, 52. A revulsive is a counterirritant or an "alleviation of disease by treatment of an adjacent region." "Revulsion," *Merriam-Webster.com Medical Dictionary*, Merriam-Webster, https://www.merriam-webster.com/dictionary/revulsion.
[47] Thompson, *The Domestic Encyclopedia*, 53.

gradual "ulcerative process" or the preferred formation of a "blind spavin," where "two opposite surfaces of bone [would] cement [or fuse] together by an intermediate bony deposit, would occur.[48]

Later in 1914, veterinary professors took this a step further in discussions about the extent of lameness over time and its effect on the soundness of a horse.[49] Thompson did not recommend veterinary services to treat spavin. Though he used some scientific terminology and recommended treatments (for example, mercury) similar to some veterinarians, he recognized the prolonged nature of the disease, a lack of surgical treatment options, an inability to cure or rebuild cartilage, the genetic predisposition of some horses, and noted similarities between the preventive measures recommended by both experiential experts and professional veterinarians. After describing the cause, treatments, and preventive measures for bone spavin, Thompson used scientific terminology to distinguish it from other joint issues.

For all joint issues, Thompson recommended ways to reduce swelling.[50] On one occasion, he advised placing a horse's hoof in a bucket of warm water to allow for cleaning of the area and better

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[48] Thompson, *The Domestic Encyclopedia*, 53.

[49] Shepherdson, "Sporadic Disease Horse," January 27 and 30, 1914, Year 3, 27–29. "Unsound" is the term used by farmers, experiential experts, and veterinarians to describe a horse in poor condition. Understanding what was and wasn't considered "sound" was a critical part of their work examining the health of livestock. Experiential experts and veterinarians go into detail about what conditions resulted in permanent or temporarily unsoundness, often in cases of inspection for sale.

[50] Thompson recalled the differences between: Bog-spavin, the fluid-filled swelling of the "synovial membrane" in the upper hock joint where the "ligaments are wider apart, and there is more room for distension" between the "tibia and astragalus," "Thoroughpin" the swelling of the hock "between the astralaus and os calcis," the scaphoid and cuneiform," "or of the bursa mucosa lying between the tendo Achilles and the tendo perforates," and "Big leg," or lymphangitis where the lymph vessels were inflamed, before lameness set in in advanced cases for each case of joint issues, among others variations. Thompson, *The Domestic Encyclopedia*, 63–64, 134. Thompson recommended a variety of treatments for thoroughpin, altering between elevation using a "truss," and "cold affusion," before applying a "tincture of arnica, diluted with water, as a wash," or possibly "blistering with biniodide of mercury," which has "occasionally worked." Thompson, *The Domestic Encyclopedia*, 63. For "Big Leg," he recommended a blister liquid "every third hour until it blistered" made up of "Biniodide of mercury 1 to 1/2 drachm, lard 1 ounce; to be well rubbed into the legs after cutting the hair short; and followed by the daily use of arnica in the shape of a wash, as follows, which is to be painted on with a brush: tincture of arnica 1 ounce, water 12 to 15 ounces; mix." Thompson, *The Domestic Encyclopedia*, 134, 278. He advised washing the leg with "linseed oil" after three days, and after six days washing the leg with soap and water for six more days. "If there should be any callous left," he recommended applying the "Spavin ointment," described in the paragraph above. Thompson, *The Domestic Encyclopedia*, 134.

observations. A later recommendation was to apply cold to reduce inflammation and use biniodide of mercury, a substance which he claimed both reduced swelling and caused a "blister of the skin."[51]

This method was similar to those recommended in early OVC lectures. For example, in the mid-1880s (less than a decade after Thompson's publication), veterinary student C. A. Zavitz recommended mercury ointments "as a stimulant absorbent for chronic swellings,"[52] and that mercury biniodide "was the most effectual agent for removing bony enlargements also chronic enlargements & sprained tendons, muscle joints, etc."[53] In the early 1900s, A. R. Colman Jr., another veterinary student, noted "Red MercuriaIodide or BinIodide of Mercury" for its effective use when "soluble in water" and "Iodide of Potash." Both students referred to these treatments as ointments for external use. Colman Jr., like earlier experiential experts and veterinary students, recommended its use "as a counter irritant for spavins and thickened joints."[54] Slight variabilities existed when people mixed popular substances kept on hand (like mercury and iodine) due to recommendations and experiences. However, the recommendation of similar substances by experiential and institutional practitioners during this period shows the overlap between both knowledge streams.

By the early twentieth century, professors at veterinary colleges had also begun teaching students about invasive surgical treatments. J. S. Shepherdson's lecture notes in 1914 distinguish between bog and bone spavin causes and treatments and in his records on "Diseases of the Hock," he notes that acute cases caused "heat pain lameness and swelling" and were "most common" in horses "with straight hocks."[55] Lectures on Materia Medica in the early 1900s recommended chloride mercury as an antiseptic for wounds or as a caustic,[56] then by 1913, advised "drawing the fluid with

[51] Thompson, *The Domestic Encyclopedia*, 70.
[52] C. A. Zavitz, "Materia Medica," Notebook, Second Term 1885, CA F163, RE1 OAC A0813, Box 1, C. A. Zavitz Collection, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 11–12.
[53] Zavitz, "Materia Medica," Second Term 1885, 13–14.
[54] Colman, "Materia Medica," 32.
[55] Shepherdson, "Sporadic Disease Horse," January 9, 1914, Year 3, 26 and 27.
[56] Colman, "Materia Medica," 29–30. Caustic refers to chemical heat or chemical burn to support healing wounds, "caustic," *The Britannica Dictionary*. https://www.britannica.com/dictionary/caustic.

the trocar and inject[ing]" a combination of iodine and chloride mercury.[57] The lecturer suggested a "tip" to "dissolve the Mercury in Rect. Spirits," using the same amount of spirits as iodine.[58] In an "Examination for Soundness" lecture on April 1, 1915, instruction was given that if in doubt, students should allow the horse to cool down and "look for stiffness."[59] While significant strides were made in veterinary science knowledge from the late nineteenth to early twentieth centuries, such cannot be said for the development of new medications by veterinary scientists. Biniodide of mercury and other substances continued to be used to treat common health issues such as joint-related issues until the dangers of these substances were identified in the early twentieth century.[60] However, what did change was veterinarians' use of surgical instruments to conduct more invasive procedures.

In 1879, Thompson preferred bathing a horse's hoof in warm water before cold treatments to reduce swelling and blistering using mercury and iodine. Similarly, early twentieth-century OVC professors recommended cold treatments and mercury-based applications before taking their methods a step further, including firing and blistering, often using sulphuric acid to provide heat to the inflamed area. Both Thompson and OVC professors recommended similar methods of examination to look for the same symptoms and treatments using similar substances. However, by 1914, institutional veterinarians had adopted more invasive methods.[61] To treat inflammation, pain,

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[57] A trocar is a surgical tool commonly found in museum collections of medicinal equipment. It consists of a sharp point at the end of a tube. J. S. Shepherdson, "Materia Medica," Notebook, December 8, 1913, Year 2, RE1 OVC AO122 Box 1, File 1.7, J. S. Shepherdson Papers, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 62.

[58] "Rect." Refers to rectified spirits, purified through distillation, Colman, "Materia Medica," 137; Shepherdson, "Materia Medica," December 8, 1913, Year 2, 62.

[59] J. S. Shepherdson, "Sporadic Disease Horse," Notebook, April 1, 1915, Year 3, RE1 OVC AO122 Box 1, File 1.3, J. S. Shepherdson Papers, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 142.

[60] Jacalyn Duffin, *History of Medicine: A Scandalously Short Introduction* (Toronto: University of Toronto Press, 2010), 170.

[61] To treat bone spavin, an OVC professor explained to Shepherdson and his classmates that "it may begin as ulceration of articular cartilage … Later the cuneiform bones become ankylosed which may extend to other bones and sometimes ligaments become ossified or surrounded by boney growths," the result of "Hereditary, predisposition, Conformation [or structure] of hock." Shepherdson, "Sporadic Disease Horse," January 16, 1914, Year 3, 27; Ankylosis is a process where bones fuse together causing stiffness, Adam Augustyn, "ankylosis," *Britannica.*

and lameness associated with bog spavin, the lecturer directed students to "apply cold applications then following with a blister and fire if necessary."[62] By blister and fire, the lecturer referred to a technique that applied a caustic chemical agent or burning substance on an inflamed area or wound to encourage healing. To treat bone spavin, the lecturer also instructed students to "Fire it at once, and blister."[63] Though firing was considered a necessary treatment by institutional and professional veterinarians, both Thompson (at the time) and present-day veterinarians recognize the cruelty of this method.

The firing method dates back to the Middle Ages. However, Thompson, thirty-five years earlier than Shepherdson's lecture notes, claimed the process was an "old method" that subjected the animal only to "torture" because it would never cure an animal and therefore this method, he argued, should "never be tried" to treat spavin.[64] Only on one occasion did Thompson recommend firing to quickly cauterize without the long-term implications ("death of nerves and other sensitive parts") of a caustic treatment used to sever and prevent the torsion of vessels during castration.[65] Today, it is highly contentious and considered inhumane by veterinarians and livestock owners. Present-day veterinarians and horse owners agree with Thompson's early cautions about firing. As a

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https://www.britannica.com/science/ankylosis. Difficult to diagnose "until there is exostosis," students were instructed to watch for short steps in the lame leg because "full exostosis causes pain" that is most noticeable when "turning and turning away from the lame leg," which usually shows "wear at the shoe." Shepherdson, "Sporadic Disease Horse," January 9, 1914, Year 3, 28; Exostosis refers to a "bony outgrowth." For example, a bone spur. "Exostosis," *Merriam-Webster.com Dictionary*, Merriam-Webster. https://www.merriam-webster.com/dictionary/exostosis. Bone spavin, in particular, the conformation of the hock, "the more [the hock joint is outward, or out of alignment,] the less favourable for complete recovery," even after rest. Therefore, "spavin is unsoundness." Shepherdson, "Sporadic Disease Horse," January 30, 1914, Year 3, 29.

[62] Shepherdson, "Sporadic Disease Horse," January 9, 1914, Year 3, 27. Firing involved a hot iron burn on the skin (possibly after a local anesthetic), and blistering involved the application of a chemical to irritate the skin further. Early veterinarians believed this would help stimulate healing. Veterinarians and livestock owners often used this treatment on racehorses. "Thermocautery (firing) of horses and racing greyhounds," *Australian Veterinary Association*, July 20, 2023. https://www.ava.com.au/policy-advocacy/policies/horse-health-and-welfare/thermocautery-of-horses/; Edward Boden and Anthony Andrews, eds., *Black's Veterinary Dictionary, 22nd Edition* (London & New York: Bloomsbury, 2015), 145, 321, and 751. https://ia903201.us.archive.org/29/items/blacks-veterinary-dictionary/Black%27s_Veterinary_Dictionary.pdf.

[63] Shepherdson, "Sporadic Disease Horse," January 30, 1914, Year 3, 29.

[64] Thompson, *The Domestic Encyclopedia*, 162–163.

[65] Thompson, *The Domestic Encyclopedia*, 129.

result, the method was banned in the U.K. in the 1990s and is considered under animal welfare Acts in Canada.[66]

The treatments recommended by Thompson and professors at OVC shared some similarities and differences. They agreed that improper anatomical structures, resulting from both injury and hereditary disposition, could lead to health issues and a decline in a horse's ability to work over time. Both initially recommended applying ointments. Though the ointments varied slightly in composition, they regularly included similar ingredients. Both Thompson and OVC professors also noted the need for quick diagnosis and treatment to slow advancement or possibly reverse the spavin, provided that the cause was not hereditary or due to an irregularly structured hock.[67] Thompson, like veterinarians at the time and in the present day, recommended that a horse ease the use of its affected joint and treat swelling. His recommendations included some anatomical terminology to observe and identify the ailment accurately. Though OVC lectures provide more scientific and anatomical detail in the early twentieth century, Dr. Peter Gillespie, a practising veterinarian in New Zealand, maintains that in present-day practices, "More often than not, such [joint] problems are nothing more than a slight strain of the joint capsule with mild inflammation but no associated lameness. [Only,] occasionally [are there] more serious joint problem[s] and lameness, that [require] veterinary attention."[68] On many occasions, Thompson recommended that readers seek veterinary services. However, like Thompson's recommendation to treat varying degrees of spavin in the mid to late nineteenth century, even to this day, veterinarians recognize that veterinary attention is only required in extenuating circumstances where lameness has developed.

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[66] "The Pros and Cons of Firing," *Horse & Hound*, January 4, 2007, https://www.horseandhound.co.uk/horse-care/vet-advice/the-pros-and-cons-of-firing-107799.
[67] OVC lecture notes did not list the blistering ointment receipt.
[68] Peter Gillespie, "The Equine Hock Joint - Hock Joint of Horses. The Structure and Problems," *Vet Pro (Veterinary Professional Services)* (August 9, 2017), https://vetpro.co.nz/the-hock/.

From the late nineteenth century to the 1920s, the discovery of germ theory combined with the use of anaesthetic substances helped to advance surgical successes in human and veterinary medicine. Historian Stephanie J. Snow argues that "anaesthesia became synonymous with ideas of progress and the spread of civilization."[69] To reduce general pain and swelling, both experiential experts and veterinary professionals in southern Ontario recognized the benefits of opium, camphor, ether, and chloroform. However, debate about the practicality of each substance continued throughout the early twentieth century within both spheres of knowledge.[70]

To help livestock experiencing pain and swelling, experiential experts, veterinarians, and companies like Days, Son & Hewitt recommended alcoholic ether to treat livestock suffering from pain and other conditions. As part of their Medicine Chests, Day, Son & Hewitt advertised alcoholic ether to treat "chills" in the 1860s.[71] Thompson, as the earliest popular author discussed throughout this dissertation (1879), recommended using ether for treating laminitis (in cases of emergency), influenza or distemper, spasm in the diaphragm, colic, fevers, anasarca (severe swelling of the whole body) in horses, and rheumatism in sheep, or as a diaphoretic drench to treat and increase the perspiration of horses, a rheumatic, stimulating, purgative, tonic, or laxative drink for cattle, a strengthening drink for sheep, or as a painkiller for general pain or specifically toothaches in humans.[72] In Zavitz's Materia Medica lecture notes from 1885, ether was similarly recommended as a "stimulant, antispasmodic diuretic and diophoretic [sic], … applied locally as an anodyne and local anesthesia. … given to oppose dangerous depression also in shiver fits as an attack of disease ...

[69] Stephanie J. Snow, *Blessed Days of Anaesthesia: How Anaesthetics Changed the World* (New York: Oxford University Press, 2008; online edition, Oxford Academic, October 31, 2023), 51–52.
[70] Snow, *Blessed Days of Anaesthesia*, 50.
[71] Day, Son & Hewitt, "Inventors of the "Original" Stockbreeders Medicine Chests," CA F173-1, RE1 OVC A0250, Miscellaneous Veterinary Records, boxed with CA F168, RE1 OVC A0148, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.
[72] Thompson, *The Domestic Encyclopedia*, 54–55, 74, 88, 96–97, 122, 255, 280, 282, 283, 284, 286, 396, 399.

colic, … acute indigestion and lympariths."[73] OVC lectures notes from 1913 described the use of ether in more detail. Shepherdson noted the composition of ether, its combination with alcohol for medicine, its ability to "produce unconsciousness and abolish reflex action," and its recommended doses, based on four stages: the "stimulating stage," followed by a "narcotic anodyne stage," an "anaesthetic stage," and finally, a "paralytic stage."[74] He further recorded the uses of ether: "1. General anesthesia for the dog, 2. Local anaesthesia [—] not used much, 3. Collapse [—] used as a stimulant, 4. Gastric Supaction, and 5. Colic — it is generally combined with anodyne."[75] Though some terminology and the scope of ether's applications changed slightly over time, there was overlap between experiential (Day, Son & Hewitt in the 1860s and Thompson in 1879) and institutional (OVC in 1885 and 1913) experts' recommended use of ether treatments.

Over the late nineteenth and early twentieth century, medical doctors and veterinarians transitioned to using chloroform instead of ether. However, this transition was not instant or all-encompassing. Initially, scientists "experimented with chloroform on animals," but ultimately dismissed it as "too lethal for patients."[76] However, John Snow, renowned as the first anaesthetist, maintained a high success rate using chloroform.[77] Though he recognized that "greater care" was necessary to "avoid accident[s]," human doctors and patients found chloroform easier to administer with a "pleasant odour."[78] Eventually chloroform's toxicity proved fatal for many human patients when doctors did not "master the use of inhalers," or dilute chloroform with alcohol.[79]

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[73] Zavitz, "Materia Medica," Spring Term 1885. In Zavitz's hand-written cursive notes, some words were misspelled. Presumably, "diophoretic" means diaphoretic and "Lympharíths" may mean lymphadenitis, infections or issues with swollen lymph nodes.
[74] Colman, "Materia Medica," 114–116.
[75] Colman, "Materia Medica," 117. Anodyne refers to a drug, or botanical herb that alleviates pain. "Anodyne," *Merriam-Webster.com Dictionary*, Merriam-Webster. https://www.merriam-webster.com/dictionary/anodyne; Aviva Romm, Eric L. Yarnell, and David Winston, "Chapter 9 - Urinary Complaints," in *Botanical Medicine for Women's Health*, eds. Aviva Romm, Mary L. Hardy, and Simon Mills (Saint Louis: Churchill Livingstone, 2010), 290–305.
[76] Snow, *Blessed Days of Anaesthesia*, 46, 123–124.
[77] Snow, *Blessed Days of Anaesthesia*, 34.
[78] Snow, *Blessed Days of Anaesthesia*, 46.
[79] Snow, *Blessed Days of Anaesthesia*, 50–51.

Thompson recommended ether in various recipes for general medications. Even so, both Thompson, in 1879, and an OVC professor, in the early 1900s, recommended using chloroform over alcoholic ether as an anesthetic on livestock farms. Thompson argued that since chloroform was "now universally employed," livestock should be treated using chloroform because it "procur[ed] insensibility to pain," which limited movement, thereby assisting those who operated on horses.[80] Before outlining the medical uses of chloroform, Colman's notes from the early 1900s emphasized one advantage and three disadvantages of using "ether over chloroform." According to Colman's notes, ether was advantageous because it was "Less depressant on heart and respiratory [cilia], therefore, [there was] less danger of [an] animal dying under the operation." The disadvantages were: "1. Causes more mucous in mouth and throat, 2. The stage of stimulation is prolonged, 3. The stage of anaesthesia is shorter."[81] However, in earlier OVC lectures from 1885, Zavitz recorded that ether should be used "as an anesetic [sic] [in the same] way & dose as chloroform."[82] In this situation, experiential knowledge from 1879 is more closely aligned with institutional knowledge from the early 1900s than from 1885.

A general transition occurred from the use of ether to chloroform. However, the knowledge distributed to farmers and veterinary students was dependent on the experiences of those who mobilized knowledge. In many cases, experiential and institutional knowledge overlapped throughout this period. Thompson, in 1879, suggested using different amounts of chloroform on the skin or by ingestion to treat spavin and tetanus. He also recommended it for the relief of pain caused by firing for cauterization during castration in horses or operations for a hernia and lump jaw in cattle, as a preventative against the cattle plague, or even to treat human colic and poisoning.[83]

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[80] Thompson, *The Domestic Encyclopedia*, 123 and 275.
[81] Colman, "Materia Medica," 117.
[82] Zavitz, "Materia Medica," Spring Term 1885.
[83] Thompson, *The Domestic Encyclopedia*, 52, 106, 127, 130, 131–132, 205, 179, 370, 376, 378, 381, 386.

Whereas, OVC limited its instruction in a Materia Medica lecture from the early 1900s to the use of chloroform as:

> 1. General anesthetic – stages the same as ether, [however,] anaesthesia takes place more quickly than ether but the stimulant stage is shorter and the anesthetic stage is longer. More depressing of heart and respiratory centre than ether, more dangerous to a dog, less irritating to throat [if] inhaled than ether. Less inflammable.
> 2. Spasmodic Cough – spirits of chloroform [were] used,
> 3. Parturition,
> 4. Diarrhea with Colic.[84]

It is likely that chloroform, like other applications, was discussed further in other lectures dedicated to livestock health ailments at OVC. It is also possible that some of these treatments were similar to those outlined by Thompson, given the similarities between other experiential and scientific instructions. Though both substances were developed and first used in the early nineteenth century, by the late nineteenth century, experiential experts and veterinary professionals both recommended and valued the use of chloroform over ether. Though Snow argues that fatalities increased with a lack of experience administering chloroform, Thompson lauded the substance for its ability to eliminate painful reactions during surgery and "little danger of over-dosing [with] this powerful agent" where "1,000 to 1 … no injurious effects [were] produced" with "ordinary care."[85] The consensus between experiential and scientific experts was clear, though not immediate. Advice from both pillars of knowledge overlapped and evolved with advancements and discoveries about medical substances, methods of administering, and their availability throughout the period.

Ether and chloroform were not the only medicinal substances used by farmers and veterinarians for pain relief. In 1879, as an experiential expert, Thompson suggested to readers that

[84] Colman clarified that an "A.CE. Mixture= Alcohol 1, Chloroform 2, [and] Ether 3, [was] best for dogs." Colman, "Materia Medica," 118 and 119.
[85] Thompson, *The Domestic Encyclopedia*, 123.

"little reliance [should] be placed on" "opium, henbane, digitalis, hellebore, and a host of other drugs." Like professors at OVC, he preferred "the adoption of chloroform."[86] Yet, both mention other common pain relief substances as well. Thompson recommended henbane three times, belladonna eleven times, hellebore seventeen times, digitalis twenty-two times, and opium concoctions fifty-eight times in his manual, presumably providing experiential methods dependent on what farmers likely had on hand.[87] Like Thompson, Andrew A. Gardenier, an expert in physiology and anatomical drawings, divided his manual, *The Successful Stockman and Manual of Husbandry*, by livestock and common ailments affecting them. He included "Standard Receipts" for use on both animals and humans, before sections on methods of disinfection to prevent the spread of contagions, "blood poisoning," and emergency care.[88] These sections offered what Gardenier perceived as "reliable and thorough information."[89] He noted the use of henbane twice (for its internal use as a narcotic and external use as a sedative), belladonna twenty-one times (for its internal use as a narcotic and external use as a sedative), hellebore nine times (for its internal use as an emetic, purgative and vermifuge (or dewormer)),[90] digitalis eleven times (for its internal use as a narcotic), and opium thirty-nine times (for its internal use as a narcotic and antispasmodic or externally in a tincture as an anodyne).[91] OVC professors in 1885, the early 1900s, and 1913–1914

[86] Thompson, *The Domestic Encyclopedia*, 106.
[87] Thompson, *The Domestic Encyclopedia*, 106 and throughout whole manual.
[88] Provenance of Andrew A. Gardenier's, *The Successful Stockman and Manual of Husbandry* (Springfield, Mass: The King-Richardson Co, 1903), 447, 461, and 465. From the private collection of Helen (Bellwood) Hanna, a resident of Stayner and later, Alliston, Ontario (Simcoe County).
[89] Gardenier provided receipts related to painkillers and stimulants, topical ointments, plasters and blisters, poultices, methods of producing seating, emetics, worm and cough remedies, medicated syrups, and medicinal essences while also including a brief explanation outlining the purpose of each treatment. He, like other experiential authors and OVC professors at the time, included a section on how to properly measure medicines to make the receipts ("1 Teaspoon holds 60 drops," "1 Thimble holds about ¾ of a fluid dram"), and outlines quantities based on age, while also taking time to emphasize that "Opiates should only be given in less quantities than other medicines because they seem to take greater effect on the young." Gardenier, *The Successful Stockman and Manual of Husbandry*, 460 and 461.
[90] Emetics cause vomiting. Purgatives act as a laxative. Vermifuge refers to a drug that removes worms or parasites from the intestines. "Vermifuge," *Collins Dictionary*, https://www.collinsdictionary.com/us/dictionary/english/vermifuge.
[91] Gardenier, *The Successful Stockman and Manual of Husbandry*.

covered each of these natural medicines in their Materia Medica lectures, listing the substances—their composition, action, and use.

The extensive use of camphor was also evident in Thompson, Gardenier, and Hodgins and Haskett's manuals—mentioned over fifty times in each of Thompson and Gardenier's alone—and in OVC's Materia Medica lectures. They each provided receipts for various mixtures where camphor was a main ingredient. Camphor is derived from an evergreen and belongs to the "same genus as the tree whose bark furnishes cinnamon" and the "sassafras of the United States." A native plant to Eastern Asia, it was introduced to North America around 1875.[92] Gardenier notes the use of camphor fifty-five times in his manual, both in a spirit and gum form.[93] In his *Consumers in the Bush*, historian Douglas McCalla notes that opium, ether, and sweet oil (mentioned below) were occasionally sold in Upper Canada's rural general stores.[94] He argues that camphor was often purchased as medicine in the early nineteenth century. This widespread use of these medicinal ingredients and their availability in local general stores across rural southern Ontario confirms that experiential experts recommended substances that farmers could stock and use quickly for their home remedies, treating livestock and people alike.

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[92] Colman, Newspaper clipping found in Colman's Materia Medica Notes, 17; Colman, "Materia Medica," 132.
[93] The home remedies with camphor include: Camphor Liniment (one quart of Olive Oil, Gum Camphor), Spirits of Camphor (one-quart Alcohol and four ounces of Camphor Gum), Camphor Ointment (two ounces of Adeps (Lard), one-ounce Powdered Gum Camphor), and a Tincture of Camphor (nine drams Gum Camphor, and one quart Alcohol), or simply camphor on its own. On its own, one to three drams of camphor taken internally acted as a Narcotic or used externally acted as an Antiseptic Discutient. Gardenier, *The Successful Stockman and Manual of Husbandry*, 44; Zavitz, "Materia Medica," Spring Term 1885, 43–44. For horses, Gardenier suggested using camphor soap liniment to treat Elephantiasis, a Lymphatic disease, or on its own to treat lameness, spirits of camphor for sunstroke or heat exhaustion, as an oil to treat bruises, combined with asafetida, a dried latex from the carrot family for "complications of the intestine" or colic, combined with ammonia, potash, licorice, belladonna, and syrup for a cough mixture. For cattle, he recommended spirits of camphor to treat corns or quittor, with powdered opium for laryngitis or combined with spirits of nitrous ether and aromatic ammonia to treat bronchitis. Gardenier, *The Successful Stockman and Manual of Husbandry*, 100, 107, 128, 137, 163, 190, and 224, 318, 321. He also recommended a mixture of spirits of camphor and opium into a sow's ear to prevent them from consuming their piglets, and a combination of camphor, blue mass, cayenne pepper, rhubarb, and Laudanum to treat cholera in poultry. Gardenier, *The Successful Stockman and Manual of Husbandry*, 410, 435.
[94] Douglas McCalla, *Consumers in the Bush*, 214.

Despite the strong similarities between experiential and professional use of veterinary medicines, professional veterinarians continued to condemn experiential practices. For example, Hodgins's application for certification under the new *Veterinary Practice Act* in 1920 was not without protest (see Chapter One) due to the "grounds that he had been convicted of an indictable offence and was not in good standing otherwise because of his questionable business methods, low ethical standards and general professional disrepute."[95] When appearing before the Veterinary Practice Board, Hodgins defended his practice. Historians of veterinary practice argue that his responses "suggested he was contemplating means of evading the spirit, if not the letter, of the law as regards his book and course. He finally agreed to submit his book to the Board for review and the establishment of a fair selling price."[96] However, the spirit of the law was executed with support from professional veterinarians, veterinary students, and OVC professors, who had to pay in both time and money to attend institutional veterinary training when others could attain the same accreditation through Hodgins' correspondence courses. Nevertheless, the popularity of the livestock health manuals underscores their value to people living in remote areas where professional veterinary services were not available and why Hodgins was able to continue selling his manuals internationally from his office in London, Ontario.

The veterinary establishment viewed Hodgins and Haskett as "quacks" who prioritized the monetization of their manuals over the disbursement of the most up-to-date veterinary science.[97] Hodgins and Haskett divided their correspondence course manual, *The Veterinary Science*, into

[95] Barker and Evans, *Century One*, 129.
[96] Barker and Evans, *Century One*, 129.
[97] Institutional veterinarians regularly condemned Hodgins and Haskett's efforts. As I discussed in earlier chapters, professional veterinarians and veterinary associations challenged the London Veterinary Correspondence School, their publications, and Hodgins's licensing. Officially, OVC students protested the school's continued offering of a distance education certificate in 1920, professional veterinarians challenged Hodgins's grandfathered status to continue practising following the 1920 *Veterinary Practice Act*, and global licensing authorities inquired about the legitimacy of distance education certificates offered in support of licensing in countries as far away as New Zealand. Barker and Evans also regularly condemn the London Veterinary Correspondence School's offerings throughout *Century One*.

livestock and common health ailments before a section devoted to "Medicines and Receipts," similarly to OVC's Materia Medica lectures. Though Hodgins and Haskett do not use the term Materia Medica, their section on medicines provided a definition similar to how the term was defined in OVC lectures, describing the Animal, Vegetable, and Mineral division of substance compositions.[98] Like OVC professors, experiential experts Hodgins and Haskett described each source of medicinal substances, before its "Action and Use."[99] In their contentious distance education manual, they included only three medicines from the animal kingdom: ammonia (a product of animal digestion and excretion), cantharides or the Spanish fly (a toxic chemical secreted by a blister beetle), and chloroform (produced when naturally occurring chlorine reacts with an organic compound), in addition to substances like lard that assisted with consistency and encouraged ingestion among livestock.[100] Thirty-three medicines were outlined from the plant kingdom, many of which are not native to Canada and instead originate from different environments globally.[101] And as mentioned previously, many of these substances, were available at the local general store or the nearest drugstore.

Hodgins and Haskett prioritized the spread of common tried-and-true home remedies throughout the nineteenth century. However, their manual went a step further than most popular

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[98] Hodgins and Haskett emphasized "It is very important that persons interested in the study of Veterinary Science should give the matter contained in Part VI. their careful attention, as the names, sources, action and use, as well as the amount to give as a dose, and the time for operation, are carefully dealt with." Hodgins and Haskett, *The Veterinary Science*, 591.

[99] Hodgins and Haskett, *The Veterinary Science*, 593–615.

[100] "Cantharides, chemical compound," *Encyclopedia Britannica*. https://www.britannica.com/topic/cantharides. Chloroform is listed under the animal kingdom in Hodgins and Haskett's manual. However, its formula is $CHCl_3$. Colman, "Materia Medica," 117. Scientists experimented with ways to produce it, using different substances. In OVC lecture notes this included rectified spirits, bleaching powder, and water (Zavitz, "Materia Medica," Spring Term 1885, 55), or made into an emulsion using glycerine (J. S. Shepherdson, "Materia Medica," Notebook, December 15, 1913, and November 23, 1914, RE1 OVC AO122, Box 1, File 1.7, J.S. Shepherdson Papers, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 28).

[101] In places such as the West Indies; Spain, Germany, and southern Russia; Central Europe, Asia, and America; Great Britain; southern Asia; the north Pacific coast; Japan and China; Africa; mountainous parts of Europe; South America; near Canadian rivers; India and Australia. Hodgins and Haskett, *The Veterinary Science*, 604, 596, 597, 598, 600, 602.

manuals when they recommended keeping a small amount of medicinal ingredients for emergency treatments. They recommended a pharmacological stockpile including:

1.	Sweet Spirits of Nitre	……	4 ounces.
2.	Laudanum	……	4 ounces.
3.	Fleming's Tincture of Aconite	……	½ ounce.
4.	Raw Linseed Oil	……	1 pint.
5.	Epsom Salts	……	1 pound.
6.	Bitter Aloes	……	8 drams.
7.	White Liniment	……	1 bottle.
8.	White Lotion	……	1 bottle.[102]

Combinations of these medicines, they claimed, would meet a need for quick treatments for livestock without the need for a veterinarian or before a veterinarian could make the long trek to treat the animal. Hodgins and Haskett outline that some diseases can develop quickly and, therefore, "prompt action is necessary" because "no matter how careful the stock owner may be in the care of [their] stock, they are always exposed to conditions over which [they] have no control."[103] They warn that accidents or injuries may occur in even the "best regulated herds." Farmers could administer "prompt treatment that may save the animal" or treat common ailments, such as "inflammation, colic, indigestion, broken limbs, or sprained muscles," sores and cuts.[104] All of the substances recommended by experiential experts, Hodgins and Haskett, also appear in lecture notes recorded at OVC.[105] Keeping these common ingredients on hand, Hodgins and Haskett claimed, would provide a quick treatment option and avoid costs associated with the loss of livestock, the time necessary to travel to a drugstore, or the time and expense of calling for a veterinarian.

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[102] Hodgins and Haskett, *The Veterinary Science*, 626.
[103] Hodgins and Haskett, *The Veterinary Science*, 626.
[104] Hodgins and Haskett also provide cost-effective advice, such as taking a bottle to obtain medicines since "the bottle often costs more than the medicine provided." Hodgins and Haskett, *The Veterinary Science*, 626.
[105] For example, an OVC professor provided the receipt for White Lotion: *plumbi acet* (lead acetate), Zinc Sulphide, and Aquam. J. S. Shepherdson, "Materia Medica," Notebook, November 24, 1913 and November 4, 1914, Year 3, RE1 OVC AO122, Box 1, File 1.7, J. S. Shepherdson Papers, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 28.

It was difficult to distinguish, according to Boyle, what was and wasn't "quackery" at the time. He argues it was difficult to distinguish between "Quacks [and] nostrum promoters" since some substances could be purchased at local drug stores, while in other cases they were sold directly by manufacturers or distributed by "wholesale and retail drug firms." Additionally, some drug manufacturers sold both medicines approved by the American Medical Association (AMA) in the United States and those that agencies considered "quackery."[106]

Many farmers were familiar with the ingredients discussed in popular animal health manuals and lectures from OVC. Thompson's early recommendations in 1879 included both man-made substances like chloroform while also recommending belladonna, ether, and sweet oil, substances used for centuries and found growing naturally in many parts of the world, including Canada. While McCalla records the number of times each medicinal product was purchased, he also notes that many were branded and proprietary, while other medicines were purchased in their generic form. For example, among products containing opium—laudanum, Godfrey's cordial, paregoric, and opium itself—twenty-eight buyers purchased these products from all eight general stores.[107] Some doctors also purchased ether, and opium-related products from general stores. However, McCalla notes that "it is clear that these men did not use these stores as their main supplier for pharmaceutical products."[108] The availability of these painkillers at general stores throughout Upper Canada signifies their wide distribution and availability to southern Ontario farmers. The substances that many experiential experts and veterinarians recommended were available in general stores across southern Ontario for farmers to purchase well before Thompson's publication in 1879, which

[106] Boyle, *Quack Medicine*, 67; Arthur J. Cramp, *Nostrums and Quackery,* vol. I (Chicago: American Medical Association, 1911), 11–13; Arthur J. Cramp, "The Bureau of Investigation of the American Medical Association," *American Journal of Police Science* 2, no. 4 (July-August 1931): 288, in Boyle, *Quack Medicine*, 67.
[107] McCalla, *Consumers in the Bush*, 84.
[108] McCalla, *Consumers in the Bush*, 85.

also demonstrates that many people in rural southern Ontario relied on a global consumer economy to purchase medications throughout the mid-nineteenth century.[109]

Looking at which products were promoted within manuals offers insight into what the authors found valuable and what some rural consumers used. However, Gardenier, author of *The Successful Stockman and Manual of Husbandry* (1903), also warned that "often times the manufacturer of medicines requires weaker syrups, and the dishonest druggist uses them instead of the standard" to mix medicines.[110] Gardenier recommended using only the highest or "best quality" of ingredients available to create the medicines he outlined, so as to ensure that livestock were receiving a medicine that was capable of addressing their ailment. However, farmers were not limited to mixing their medicines with readily available substances or purchasing medicines mixed by their local druggist. Farmers also had access to pre-mixed, patent medicines.

Proprietary and Patent Medicines: Purchased by Farmers and Professional Veterinarians

Advertisements in agricultural journals, popular animal health manuals written by experiential experts and sold across southern Ontario by subscription, and lectures given to veterinary students at OVC also recommended proprietary or patent medicines. In the United States, Boyle argues that the distinction between proprietary and patent medicines is "problematic" because few medicines actually held patents.[111] Some medicines recommended to farmers were produced in Ontario, while others were distributed within a global market.

Despite increasing regulations in the early twentieth century, Eric Boyle argues that in Britain, similarly to Canada, "a commitment to freedom of the press made it virtually impossible to

[109] McCalla, *Consumers in the Bush*, 7.
[110] Gardenier, *The Successful Stockman and Manual of Husbandry*, 457.
[111] Boyle, *Quack Medicine*, 67.

restrict [patent medicine] producers" from advertising fraudulent claims to the masses.[112] In Canada, historian Paul Rutherford argues, the twentieth century brought with it a "new art of huckersterism [sic]." A striking transformation from the "pedantic tone of earlier times" to a "democratic age" where large patent medicine advertisements occupied a considerable portion of publications.[113] In this new era of marketing, publishers produced more visually appealing, specific, and catchy ads in an effort to catch the attention of consumers with a wide range of different "tastes and means."[114] However, as I discuss later in this chapter, their representation of farmers' positive testimonials is problematic.

Earlier in the mid-nineteenth century, some remedies were distributed to Canadian settlers through a trade network within the British colonies. Contained in OVC student, A. R. Colman's collection from his professional career as a veterinarian, a pamphlet produced in 1866, advertised a medicine chest that equipped stockbreeders living in the British colonies with medicines.[115] The advertisement for Day, Son & Hewitt's Stockbreeders Medical Chests featured Queen Victoria's royal seal on the upper left and the Prince of Wales's seal on the top right, after receiving their "special warrant" on December 27, 1865, and February 10, 1866, respectively (the company still

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[112] Boyle, *Quack Medicine*, 6.
[113] Paul Rutherford, *A Victorian Authority: The Daily Press in Late Nineteenth-Century Canada* (Toronto: University of Toronto Press, 1982), 121.
[114] Rutherford, *A Victorian Authority: The Daily Press in Late Nineteenth-Century Canada*, 125.
[115] Day, Son & Hewitt, "Inventors of the "Original" Stockbreeders Medicine Chests." This advertisement was likely part of A. R. Colman Sr.'s collection in the OVC fonds at the University of Guelph Archives & Special Collections. He graduated from OVC in 1876. He was first listed as a butcher in the census before a "V. Surgeon" in 1901 at 56. There were some discrepancies between "Afred" and "Arthur" in the Census. Arthur was listed as a butcher in 1881, and "Afred" was listed as a V. Surgeon in 1901. Statistics Canada. Census of Canada, 1881, RG31, Item ID: 20107745, Ontario, Norfolk South District 157, Sub District Port Dover, page 20. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/Home/Record?app=census&IdNumber=20107745&ecopy=e008195011; Statistics Canada. Census of Canada, 1901, RG31, Item ID: 35353481, Ontario, Norfolk South District 94, Walpole Sub District H, page 8. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/Home/Record?app=census&IdNumber=35353481&ecopy=z000087055; C.A.V. Barker, The Ontario Veterinary College Alumni Association, *Guelph Alumnus* 17, no. 1 (Department of Alumni Affairs and Development – Information Services, University of Guelph, Winter 1984): 22. https://www.uoguelph.ca/theportico/archive/1984/1984winter.pdf, https://issuu.com/uofguelph/docs/1984winter.

holds this title).[116] Figure 4.3 shows the contents of two different medicine chest offerings. The medicines, the company claimed, would treat "all disorders in horses, cattle, calves, sheep, and lambs." The chests contained "Chemical Extract," "Gaseous Fluid," "Red Drench," "Broncholine," "Red Paste Balls," "Gaseodyne," "Carminative Chalk," and "Alcoholic Ether," which the advertisement claimed, "contain[ed] all that a Farmer can require to keep his stock free from Disease, and in fine healthy condition."[117] The medicines contained substances in a composition recommended by experiential experts and professional veterinarians in Ontario. For example, Zavitz recorded that balls were the "most convenient method of administering medicine," in 1885.[118] The promotion (and possibly the sale) of Day, Son & Hewitt's medical chest throughout southern Ontario is evidence of patent medicine developers' determination to expand and capitalize on a market for animal healthcare while answering farmers' and consumers' calls for swift access to medicinal treatments. However, the discovery of this advertisement in the collection of a nineteenth-century veterinarian trained at OVC and practising in southern Ontario and their continued sale of horse supplements today is evidence of the blurred line between folk and professional remedies.

[116] Day, Son & Hewitt, "Our History," Loughborough, United Kingdom, https://www.daysonhewitt.co.uk/history/.
[117] Day, Son & Hewitt, "Stockbreeders Medicine Chests."
[118] C. A. Zavitz, "Practical Horse," Notebook, October 5, 1885, CA F163, RE1 OAC A0813, Box 1, C. A. Zavitz Collection, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 2–3.

Figure 3.2: Advertisement for a British Stockbreeders Medicine Chest from 1866, found in the collection of a professional veterinarian who practised at the turn of the twentieth century

Source: Day, Son & Hewitt, "Stockbreeders Medicine Chests."

The work of merchants of patent medicine to advertise and develop global trade relationships throughout the British colonies reflects a gap in access to mid-nineteenth-century livestock healthcare. In 1866, when Day, Son & Hewitt produced the advertisement in Figure 3.2, veterinary lectures had existed for four years in Toronto.[119] However, as historian James Fisher

[119] After years of discussion about promoting veterinary science among British institutional veterinarians, some of whom had immigrated to Canada, bring with them their agricultural and veterinary knowledge.
Many moved to Canada and began establishing farms. Though gentry landowner–farmer relationships did not exist as they did in Britain, a vacuum of demand for animal healthcare made the supply of patent medicines appealing to many Canadian settlers. The front image of Day, Son & Hewitt's advertisement (Figure 3.2) includes dialogue and description of an exchange between a "Cowman," with his arm over a cow, a "Shepherd," carrying a shepherd's crook, a "Waggoner," holding the harness of the lead horse, all stockbreeders who looked up to a "Farmer," and possibly a wealthier British landowner dressed in a suit and top hat. The promotional dialogue praises Day, Son & Hewitt, for

outlines in his study on agricultural knowledge production in eighteenth-century Britain, when the landowners became more engaged in animal husbandry in the latter half of the seventeenth and into the eighteenth century, animal husbandry was reimagined and elevated by agricultural science while it started to undermine the experiential knowledge of stockbreeders and farm labourers.[120]

Day, Son & Hewitt recognized and sought to fill the void in farmers' access to veterinary services. Their 1866 advertisement appealed to farmers' desire for efficient treatments because, as Zachary Dorner notes, "manufactured medicines offered a convenient solution to the omnipresent challenge of manpower by the logic that certain treatments could work on anybody [or any animal] irrespective of external characteristics or internal complexion."[121] Merchants' mass manufacturing and distribution of medicines had led them to become "bulk, mobile commodities, offering efficacy across the geographies linked by the infrastructure of overseas empire."[122] Day, Son & Hewitt's medical chests were no exception. Early medicine merchants sought to provide cure-all medicines in mass quantities. These medicines have been available in Canada since at least the mid-nineteenth century. Livestock breeders in southern Ontario had access to advertisements from companies that drew on immigrants' connection to Britain and the standards associated with royal warrants to distribute their products globally. They offered settler farmers, and, possibly in the case of Colman, prospective veterinarians access to pre-mixed medicines that could be kept on hand to treat livestock health ailments as they arose.

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recognizing and meeting the needs of animals and stockbreeders to help keep livestock "in fine healthy condition" and "free from disease." The advertisement argues that it depicted "a fair representation of what may be supposed to be taking place daily at some large farm homesteads in the United Kingdom, Australia, and the British Colonies." Day, Son & Hewitt, "Stockbreeders Medicine Chests."

120 James Fisher, *The Enclosure of Knowledge: Books, Power and Agrarian Capitalism in Britain, 1660–1800* (Cambridge: Cambridge University Press, 2022), 93, 120–121. In nine testimonials from stockbreeders and agricultural newspapers and their inclusion of royal warrants in this advertisement, Day, Son & Hewitt appealed to those who could afford to purchase and keep their medicines on hand to relieve cattle, horses, and sheep of colic, gripes, scour, and other ailments. Day, Son & Hewitt, "Stockbreeders Medicine Chests."

121 Dorner, *Merchants of Medicine*, 11.

122 Dorner, *Merchants of Medicine*, 5.

Though some early medicine chests were sold throughout the British colonies, the Ontario-based production of proprietary and patent medicines grew in the early twentieth century. As veterinary science advanced and "merchants of medicine" in Ontario began to develop and distribute veterinary drugs to rural areas that lacked access to a veterinarian, producers and merchants began instructing farmers in their treatment of livestock while praising their ability to quickly observe changes in behaviour, physical appearance, and environments. In many cases, this strategy limited suffering and helped farmers forego costs associated with delayed healthcare. As the commercialization, mass production, and marketing of patent medicines ramped up in the early twentieth century, so did the spread of knowledge of veterinary science.

Nineteenth-century Canadians, Rutherford argues, "were sorely troubled by the state of their health, perhaps too by the inadequacies of the medical profession."[123] As the animal agriculture industry expanded, similar concerns developed among state officials and farmers. From the late nineteenth to the early twentieth centuries, advertisers "capitalized on the mystery in which regular doctors often enshrouded the whole subject of medicine."[124] Initially, veterinary medicine adopted a similar, top-down approach. Professional veterinary medicine, as it was practised in institutional laboratories and lecture halls, was removed from the agricultural environments where many livestock lived. Patent medicine advertisers often claimed that their products were infallible for "any disease under the sun."[125] However, professional, private–practice veterinarians at the time lacked the resources to assess the effectiveness of treatments accurately or to compare "quack" remedies with professional veterinary treatments, leaving farmers unable to distinguish the difference.[126] Many professional medical and veterinary doctors contested the legitimacy and application of "quack"

[123] Rutherford, *A Victorian Authority: The Daily Press in Late Nineteenth-Century Canada*, 121.
[124] Boyle, *Quack Medicine*, 6.
[125] Boyle, *Quack Medicine*, 11.
[126] Boyle, *Quack Medicine*, 6.

remedies. While some, such as the physicians who published and contributed to the *Dominion Medical Monthly* in 1907, acknowledged that while patent medicines were "sometimes … useful, sometimes dangerous, and often times absolutely of no good what[so]ever," it would be "foolish and nonsensical to say that all patent medicines and proprietary preparations in drugs were no good."[127] Therefore, the government stepped in to regulate the advertising of medicine because there were so many companies offering bogus products that exploited consumers, and in the case of veterinary medicine harmed animals.

Eventually, a committee appointed by the Canadian government found that hundreds of drugs on the market contained "cocaine, opium, strychnine, arsenic, and other equally dangerous ones, while many were simply alcoholic beverages sold under the guise of medicine." The committee found that the legislation at the time did not cover "secret-formula proprietary preparations" or drugs that held patents. As a result, the *Proprietary or Patent Medicine Act* (enacted in 1909) sought to regulate the trade and commerce of drugs not covered by the *Adulteration Act*, which later became the *Food and Drugs Act* (1920, after the federal Department of Health was established), specifically to drugs with secret formulas.[128] Under the *Food and Drugs Act*, ingredient lists were required, including lists of medicinal ingredients. However, the *Proprietary or Patent Medicine Act* limited the amount of alcohol and scheduled drugs allowed in each substance and required a label with the drug's registration number, and scheduled substances were listed for consumers.[129] Consequently, patent

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[127] "The Federal Proprietary and Patent Medicine Act," *The Dominion Medical Monthly and Ontario Medical Journal* 28, no. 3 (March 1907): 138–139; Heather MacDougall, "CASSIDY, JOHN JOSEPH," in *Dictionary of Canadian Biography*, vol. 14, University of Toronto/Université Laval, 1998. https://www.biographi.ca/en/bio/cassidy_john_joseph_14E.html.
[128] Paul Soucy, "The Proprietary or Patent Medicine Act of Canada," *Food, Drug, Cosmetic Law Journal* 8, no. 11 (1953): 706; "The Federal Proprietary and Patent Medicine Act," 138–139.
[129] Soucy, "The Proprietary or Patent Medicine Act of Canada," 707; "Proprietary or patent medicine registers," R227-243-X-E, RG29, ID: 4166220, Department of Health fonds, Health Protection Branch sous-fonds, Library Archives Canada, Ottawa, Ontario.

medicine developers in Canada could choose which Act their product should be sold and advertised under.[130]

In agricultural publications across Ontario, companies regularly advertised their medicines to treat spavin, which, as we have seen, was a common yet prolonged ailment that could severely affect a horse's productivity. It is possible that these medicines helped reduce pain and swelling, in that their ingredients were similar to those recommended by experiential experts, institutional veterinarians, and companies like Day, Son & Hewitt. However, their specific measurements were not advertised. To treat spavin, *The Farmer's Advocate* alone published advertisements from Dick & Co. out of Montréal, which advertised a blister treatment among other powders in 1893; Dr. J. B. Kendall Co. out of Vermont, which advertised a liniment called "Kendall's Spavin Cure" beginning in 1900; Gombault's Caustic Balsam, which started advertising their sale of the "Great French Veterinary Treatment" out of Toronto in 1900; Dr. Page's English Spavin Cure sold by a druggist in Toronto who began advertising in 1920; and Fleming Brothers' Spavin Cure, which began prominently advertising their Ontario-based products in 1902 (shown in Figure 3.3).[131] Each company claimed to offer the best or only cure for spavin and used only complimentary testimonials from farmers and veterinarians in advertisements to support their claims. However, their approaches were significantly different. Some companies sought to cure spavin using blistering applications or caustic solutions, while others promoted liniments that did not cause blisters or absorbents that removed swelling rather than blistering.[132]

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[130] Soucy, "The Proprietary or Patent Medicine Act of Canada," 708.
[131] *The Farmer's Advocate* XXVIII, no. 331 (April 1, 1893): 140; *The Farmer's Advocate* XXXV, no. 501 (May 1, 1900): 276; *The Farmer's Advocate* XXXV, no. 516 (December 15, 1900): 765; *The Farmer's Advocate* XXXVII, no. 549 (May 1, 1902): 365; *The Farmer's Advocate* XXXVII, no. 559 (October 1, 1902): 736.
[132] *The Farmer's Advocate* (April 1, 1893): 140; *The Farmer's Advocate* (May 1, 1900): 276; *The Farmer's Advocate* (December 15, 1900): 765; *The Farmer's Advocate* (May 1, 1902): 365; *The Farmer's Advocate* (October 1, 1902): 736.

Figure 3.3: The first of Fleming's advertisements addressing spavin to appear in *The Farmer's Advocate*

Source: The Farmer's Advocate XXXVII, no. 559 (October 1, 1902): 736.

The sale of these diverse products illustrates that experiential and professional veterinarians had a similar understanding of spavin. The irreversible nature of the hock joint ailment encouraged both groups to treat its symptoms or stimulate horses in a manner that reduced the need for rest and encouraged labour. Experiential practitioners and veterinarians recommended innovative solutions and curative remedies to farmers that addressed symptoms in the short term, despite their experiential and scientific knowledge of the disease's prolonged, degenerative nature. Both experiential practitioners and professional veterinarians acknowledged that there was little need to seek veterinary services, due to the need for preventive approaches and treatment for symptoms like pain and swelling as a horse rested. Later on, as veterinary authority grew and procedures became more invasive, veterinarians offered assistance in more extreme cases that had resulted in lameness (as discussed above).

Fleming Brothers, a company with addresses in Toronto and St. George, was one of the most prominent patent medicines producers, advertising in publications distributed throughout southern Ontario. Known as both Fleming Brothers, Chemists, and simply, Fleming's, in their pocket manuals, both experiential and professional veterinarians alike recommended the Fleming

Brothers' patent medicines. They widely advertised in popular manuals and periodicals and were recommended to veterinary students in lectures at OVC as early as 1885. Zavitz noted that "Flemming's [sic] tincture of aconite is the novel [and] convenient" method for treating "the first stages of pleurisy pneumonia, Bronchitis, [and] colic," in addition to, "itchiness of the skin," "irritability," and inflammation using the same, consistent (or standardized) doses for animal.[133] The manufacturing of Fleming's products in St. George provided informal and formal livestock healthcare practitioners with easily accessible, pre-mixed tinctures that the Fleming Brothers argued would help them treat livestock swiftly.

Authors of popular animal health manuals regularly recommended Fleming Brothers products to those who purchased their manuals by subscription. Both 1901 and 1903 editions of *The Successful Stockman and Manual of Husbandry* recommended Fleming's aconite tincture. Gardenier noted, "Fleming's tincture, two to five drops every four or five hours" for pneumonia.[134] He recommended a tincture of aconite nine times throughout his manual and on one occasion recommended Fleming Brothers' product to treat pneumonia in cattle.[135] Gardenier's recommendation to use Fleming's aconite tincture was based on his own experience with the solution and his desire to equip readers with a quick way to source a medicine and treat livestock. He recognized that "Aconite is a valuable drug in the hands of the intelligent practitioner," but warned that "not infrequently animals are lost by its injudicious use … In a plethoric animal, with a strong bounding pulse, bleeding may be resorted to instead of administering aconite."[136] However, a

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[133] Zavitz, "Materia Medica," Spring Term 1885, 16–17.
[134] Gardenier, *The Successful Stockman and Manual of Husbandry*, 320.
[135] Fleming's tincture of aconite is noted on page 320. Gardenier, *The Successful Stockman and Manual of Husbandry*, 97, 105, 110, 128, 239, 295, 297, 316, 320, 380.
[136] Gardenier, *The Successful Stockman and Manual of Husbandry*, 320. Bleeding or bloodletting is an ancient practice that stemmed from Hippocrates' belief in the theory of humours, which claimed that blood, phlegm, and yellow and black bile imbalances were the root of all health issues. Blood extraction, like leeching in human medicine or cutting into a vein, sought to rebalance the blood. This approach was widely used globally for centuries to treat various diseases. Canadian physician William Osler called for bloodletting as the most effective treatment for pneumonia "as late as 1942." "Bloodletting," *Encyclopedia Britannica*. https://www.britannica.com/science/bloodletting.

juxtaposition exists, wherein, Gardenier recommended more invasive treatment options while also stressing caution to the harms Fleming Brothers treatment could cause. He recommended that farmers should rely most on practices where they had experienced success to avoid harming livestock.

Hodgins and Haskett, authors of *The Veterinary Science*, recommended different tinctures available in southern Ontario. In addition to their recommendation to keep Fleming's tincture of aconite on hand, as quoted above, they advised farmers on the use of patent medicines that they considered most reliable. Out of the popular manuals included in this study, Hodgins and Haskett recommended Fleming's tincture of aconite most, on forty-five occasions in their manual's 107th edition.[137] Like Gardenier, Hodgins and Haskett noted aconite's effect on slowing the heart rate and decreasing blood pressure. However, they expanded on Gardenier's descriptions, stating that at the time of their publication in 1907 it was "used now in nearly every case in place of bleeding."[138] Like other experiential authors of popular manuals, Hodgins and Haskett recommended a combination of ingredients to treat the symptoms and organs associated with each ailment.[139] They recommended

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[137] To treat inflammation, Hodgins and Haskett recommended using Fleming's Tincture of Aconite in different doses based on the size of livestock bodies. Hodgins and Haskett, *The Veterinary Science*, 595. They also suggest creating solutions by combining aconite with natural medicinal ingredients kept on hand. For example, ten drops of aconite combined with one ounce or four dessert spoonfuls of sweet spirits of nitre and laudanum, and one teaspoonful of bicarbonate soda and ginger to treat colic or indigestion drench. Hodgins and Haskett, *The Veterinary Science*, 621. A slightly different concoction using Fleming's aconite was recommended for the treatment of congestion, inflammation in a horse's lungs, or pneumonia, bronchitis, mixed only with linseed oil to treat broken wind or heaves (similar to asthma), spasmodic colic or inflammation in the bowels (enteritis), rupture of the back bowel, peritonitis, inflammation of the kidneys, bladder, or testicles, rupture and inflammation of the womb, garget (which was more common in cattle), peritonitis following castration, inflammation of the brain (phrenitis), azotura, laminitis, and chills in horse's alone. Hodgins and Haskett, *The Veterinary Science*, 112, 115, 118, 120, 148, and 152, 159, 161, 170, 177 or 174, 192 and 194, 195, 208, 248, 270, 312, 330. For cattle, Hodgins and Haskett recommended using Fleming's aconite solution to treat inflammation, diseases, and some ailments similar to those outlined above for horses. Hodgins and Haskett also noted its use for inflammation of the rennet or fourth division of the stomach, dysentery, and corn stalk disease in cattle. Hodgins and Haskett, *The Veterinary Science*, 364, 366, 424. Hodgins and Haskett made similar recommendations for sheep and pigs. In addition to treating common inflammation issues similar to horses and cattle, they recommended using Fleming's tincture of aconite to treat lamb-bed turned out or pig-bed turned out. Bed-turned-out refers to cases where hindquarters were too low, causing the womb to press into the pelvic or hip cavity and causing pain before the bed could be discharged. Hodgins and Haskett, *The Veterinary Science*, 476 and 493.

[138] Hodgins and Haskett, *The Veterinary Science*, 595.

[139] For example, if an animal were experiencing intense pain, a pain reliever such as laudanum (a tincture of opium), a stimulant or diuretic for the kidneys such as whiskey, gin, beer, or ale, sweet spirits of nitre for the kidneys and skin or to

similar treatments for different animals, distinguished by size. They also noted substances known to react badly and offered their readers treatment options using household items before veterinarians were available. Though authors of popular manuals promoted their practical approach to using patent medicines like Fleming's aconite solution, their strategy overlapped with recommendations that OVC professors made to veterinary students.

During a period when Fleming Brothers regularly advertised in agricultural publications, OVC also recommended the company's tincture of aconite. However, Materia Medica lectures included more detail. First, on January 15, 1915, like Hodgins and Haskett's recommendations to farmers, OVC students were taught that aconite "reduces the frequency of pulse." However, lecture notes provided more detail, noting that the tincture "slow[ed] the heart" and reduced blood pressure before suggesting that "medicinal preparations" made from the root were "6 times stronger than those from the leaves."[140] Shepherdson recorded that aconitine, the alkaloid compound of aconite, also known as wolfsbane, is soluble in chloroform, ether, and alcohol. However, given its composition, the professor argued that "aconitine is not very reliable" if formulated from its base ingredients, which contained "impurities."[141] He outlined that it was best given to strong animals with a high temperature and a strong pulse. He cautioned that Fleming's aconite was "12 times

relieve pain and gas in the bowels and stomach, to aid digestion—soda bicarbonate and for gas relief, ginger, a laxative such a linseed oil, or to physic or purge, Epsom salts for cattle, sheep, and pigs, whereas bitter aloes were given to horses instead, and, less commonly, nitrate of potash or saltpetre to treat the kidneys and blood or lung troubles, or bromide of potassium to "quiet the nerves" in cases of "lock jaw (tetanus), or in convulsions, chorea, and other painful diseases," would be recommended in combination with aconite. Hodgins and Haskett, *The Veterinary Science*, 601, 595, 604, 614, 600, 601, 613, 611, 607.

[140] Shepherdson, "Materia Medica," January 27, 1915, Year 3, 99.

[141] Aconite's formula contained, "Hydrobromide, Hydrochloride, and the Nitrate." Shepherdson, "Materia Medica," January 27, 1915, Year 3, 99 and 100.

stronger than ordinary B.P. Tr."[142] OVC professors went on to explain the uses, effects, and dosages of aconite for livestock and domestic animals in more detail.[143]

OVC professors, like popular authors, recommended using Fleming Brothers tincture of aconite for different ailments in all livestock.[144] Veterinary students were given more detailed explanations and better understood many of the effects and uses of different medicines. However, the farmer did not necessarily need this in-depth knowledge. Instead, authors of popular publications provided a general overview using experiential knowledge and empirical data for quick treatments when veterinarians were unavailable.

Fleming Brothers' tincture of aconite was not the only patent medicine recommended by both experiential expert authors of popular publications and OVC professors. Both groups also recommended Fowler's arsenic solution. Similar to how OVC professors cautioned against poisoning from Fleming's tincture of aconite due to its strength, popular animal health manual authors cautioned against arsenic poisoning. Thomas Fowler patented his arsenic solution in England in the mid-eighteenth century. He developed the solution to treat malaria and syphilis

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[142] Shepherdson, "Materia Medica," January 27, 1915, Year 3, 100. It appears that the acronym "B.P. Tr." was used separately as "B.P." and "Tr." and together to describe a standardized tincture of aconite. B.P. was used to describe other substances as well, referring to the British Pharmacopoeia Chemical Standardization. "Tr." refers to a tincture. Kartick Chandra Bose, *Pharmacopoeia Indica Medicinal & Mineral Drugs* (Calcutta: The Book Company Ltd., 1932), appendix 25–26. http://archive.org/details/PharmacopoeiaIndicaMedicinalMineralDrugs; Pierre A. Fish, *Book of Veterinary Doses: Therapeutic Terms and Prescription Writing* (Ithaca: The Comstock Publishing Co., 1919), 101. http://www.survivorlibrary.com/library/veterinary_doses_therapeutic_terms_and_prescription_writing_1919.pdf.

[143] J. S. Shepherdson recorded that aconite's localized application "produces depressive effects on the sensory nerve endings acting as an anodyne," "given by mouth it produces the same effect on muc. mem. [mucous membrane]," "small doses act as a gastric sedative," large doses [were] said to produce "gastric irritability and salivation," and it was "best given in smaller doses and frequently repeated." If a poisonous dose was given, the heart was "arrested in dyastale [diastole], but death really results from asphyxia." Aconite tinctures also "produced great muscular weakness and anaesthesia," and its "effect on the respiration is produced thru the medullary centres. The drug produces sweating, which reduces temp. and also enlarges the capillary… and also acts as a diuretic." Shepherdson, "Materia Medica," February 4/14, Year 3, 101. While describing poisonous doses for horses, cattle, and dogs, the professor cautioned that "horses have been poisoned by Fleming's TR. given by mouth." Shepherdson, "Materia Medica," February 4/14, Year 3, 101 and 102.

[144] Shepherdson recorded, "It may be used in the first stages only of pharyngitis, Laryngitis, bronchitis, peritants, pneumonia, also in Laminitis Lymphangitis, and in the first stage of percarditic and Endocarditis." However, it "is of little value in Influenza or sore throat." Shepherdson, "Materia Medica," February 4/14, Year 3, 102.

before toxicity levels "limited its utility."[145] Some popular authors, like Thompson in 1879, provided antidotes for arsenic poisoning from Fowler's solution or others.[146] Hodgins and Haskett cautioned about arsenic poisoning on numerous occasions.[147] They later stated that arsenic was not used in its "pure form … because it is too strong and powerful."[148] As a result, they recommended Fowler's liquid solution to help farmers avoid arsenic poisoning that may have resulted from using homemade preparations.[149]

In the late nineteenth and early twentieth centuries, experiential experts and veterinarians were aware of issues with arsenic poisoning. However, they continued to rely on arsenic to treat livestock health issues. In 1903, Gardenier recommended in *The Stockman's Guide* that farmers should use Fowler's arsenic solution to help horses with fever spells, sores, and swelling.[150] Though Hodgins and Haskett only reference Fowler's company specifically in their description of arsenic medications in 1907, they recommend using Fowler's solution for every arsenic treatment.[151] This experiential knowledge informed farmers about ways to continue using arsenic in livestock healthcare practices.

OVC professors in the early 1900s, 1913, and 1914 also recommended Fowler's solution of arsenic, noting proper doses for horses, cattle, sheep, and swine.[152] Like Fleming's tincture of

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145 Derek Ho and Eve J. Lowenstein, "Fowler's Solution and the Evolution of the Use of Arsenic in Modern Medicine," *Skinmed* 14, no. 4 (August 2016): 287.
146 Thompson, *The Domestic Encyclopedia*, 377.
147 Hodgins and Haskett most often mention arsenic when they caution the reader about possible causes of poisoning. For example, in their descriptions of inflammation of the stomach, poisoning from Paris Green, a common substance made up of arsenic and copperas that people used to kill "vermin and noxious insects" on farms, and poisoning in dogs, cats and poultry. Hodgins and Haskett, *The Veterinary Science*, 143, 331, 519.
148 Hodgins and Haskett, *The Veterinary Science*, 606. Though its toxicity has limited its application, a derivative of the original solution is used in present-day medicine to treat leukemia. Ho and Lowenstein, "Fowler's Solution and the Evolution of the Use of Arsenic in Modern Medicine," 287–289.
149 Hodgins and Haskett, *The Veterinary Science*, 606.
150 Gardenier, *The Successful Stockman and Manual of Husbandry*, 163.
151 For example, "as a powerful tonic for the stomach and system in general," it was recommended to help horses recover from diseases such as distemper. Hodgins and Haskett, *The Veterinary Science*, 606.
152 Colman, "Materia Medica," 12; Shepherdson, "Materia Medica," Notebook, includes two dates on the same page - November 4/14 and November 24/14, Year 3, RE1 OVC AO122, Box 1, File 7, J.S. Shepherdson Papers, C.A.V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 46.

aconite, both experiential experts and institutional veterinarians recommended Fowler's solution of arsenic to their respective audiences. Livestock owners continued using it in "feed additives for weight gain, feed efficiencies and pigmentation and the prevention and treatment of parasitic infectious diseases" from the mid-1940s until the mid-2010s in the United States and Canada until 2019. However, arsenic use subsided with the introduction of antibiotics, especially after Alexander Fleming discovered penicillin in 1928.[153]

In addition to Fleming's tincture of aconite and Fowler's arsenic solution, experiential experts and institutional veterinarians in Ontario also recommended Monsel's solution. Léon Monsel, a French pharmacist in the military, developed the solution in the mid-nineteenth century after recognizing the "coagulation power of ferric sub-sulfate."[154] Farmers and the military used Monsel's iron sulphate solution, and variations are still used in modern medicine to help stop bleeding in minor surgeries.[155] Though Monsel's solution was not listed in Gardenier (1879) or Thompson's (1903) publications, Hodgins and Haskett (1907) recommended it fourteen times for issues like rheumatism, to stop bleeding, encourage scabbing over a wound from cuts or following the removal of tumours, blood spavin (the enlargement of veins), dehorning, to treat an open joint wound, following the removal of an infected eye in the early stages of cattle disease, removal of tails from lambs or puppies, comb or wattle wounds, or fowl injuries.[156] However, Monsel's solution, a globally distributed agent for blood clotting, was not only recommended by experiential experts or what many veterinary professionals called "quack" practitioners.

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[153] Antibiotics, though developed during the period of this study, did not become a widespread, integral part of animal husbandry and veterinary medicine until the mid-twentieth century, nor did they appear in the primary sources consulted throughout this study. Ngozi P. Paul, Adriana E. Galván, Kunie Yoshinaga-Sakurai, Barry P. Rosen, and Masafumi Yoshinaga, "Arsenic in Medicine: Past, Present and Future – PMC," *Biometals* 36 (February 2022): 295–96, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8860286/.
[154] Georges Brun, "Léon Monsel and his Solution," *Rev Hist Pharm (Paris)* 57, no. 362 (July 2009): 193–200.
[155] Georges Brun, "Léon Monsel and his Solution," 193–200.
[156] Hodgins and Haskett, *The Veterinary Science*, 129, 199, 204, 243, 279, 308, 399, 415, 480, 513, 580, and 611.

Veterinarians also recommended Monsel's solution in their institutional instruction to veterinary students. In Materia Medica lectures given by OVC professors in 1904, Monsel's solution of "liquid Ferric Sulphatis" was recommended alongside Fowler's arsenic solution.[157] The effectiveness of Monsel's solution encouraged both experiential practitioners and professional veterinarians to widely recommend the application in varying quantities on different livestock.

Both experiential and veterinary experts recommended well-established patent medicines that manufacturers distributed globally (though some, like those manufactured by Fleming Brothers, were produced in southern Ontario). The overlap in their recommendations to farmers and veterinarians illustrates both the demand for these standardized products and the need for quick veterinary solutions. The patent medicine industry grew because it answered demand for quickly and easily accessible medicines.[158] Though mixing their medicines offered farmers flexibility, patent medicines offered quicker access to standardized medicines. Most importantly, both types offered options for cost-effective treatments that alleviated animal suffering when veterinary services were not available or were too costly due to the time and distance required to travel and treat livestock. Sometimes, like in the case of William Standen and his neighbour Alfred Morren in Chapter One,

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[157] Colman, "Materia Medica," 12.

[158] For example, some ingredients in pre-mixed patent medicines included in Day, Son & Hewitt's "Stockbreeders Medical Chests" from the mid-nineteenth century were further sold by patent medicine companies in the early twentieth century. It is likely that Day, Son & Hewitt's "gaseous fluid" used to treat colic contained linseed oil or the "red drench" to treat cattle after calving by "checking all feverish symptoms" to "render the milk of the cow or ewe copious, pure, and wholesome for their offspring" may have contained medicinal and household ingredients noted by Hodgins and Haskett. Day, Son & Hewitt, "Stockbreeders Medicine Chests." For example, epsom salts, brown sugar, common salt, ginger, or bicarbonate salt, which Hodgins and Haskett recommended for use as a "Physic Drench for Cattle" or bitter aloes, bicarbonate soda, or ginger that they recommended as a "Physic Drench for Horses." Hodgins and Haskett, *The Veterinary Science*, 619. Day, Son & Hewitt's Red Drench or Red Paste balls may contain an ingredient Thompson, Hodgins and Haskett, and OVC professors called Biniodid of Mercury or Red Precipitate a bright red powder used for blistering bony enlargements, like spavin. Hodgins and Haskett, *The Veterinary Science*, 607. Substances that Colman and Shepherdson noted in their lecture notes should be used as a "counter irritant or absorbent" often "for spavins and thickened joints" or an "ointment may be used in chronic thickened ulcers" and "parasitic skin diseases." Colman, "Materia Medica," 30–32; J. S. Shepherdson, "Materia Medica," Notebook, November 19, 1913 – October 28, 1914, J. S. Shepherdson Papers, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 43.

farmers could also travel to their local animal health expert to obtain medicines mixed by their neighbours to treat a specific ailment.

Experiential practitioners (before their credentials were contested and revoked) recommended home mixtures and specific brands of medicines for species of livestock using different doses. They recommended remedies and instructions supported by empirical data and their experiences. However, they did not manufacture and sell a specific product themselves; instead, they recommended practices others had found useful, and they benefitted from selling this knowledge. As the twentieth century progressed, institutionally trained scientists like veterinarian Dr. George Bell recognized a need not only to deliver knowledge of quick first-aid treatments for common diseases but also to distribute medicinal products that he himself claimed would help people in rural areas treat livestock.

Conflict over a Popular Cure-all Medicine in Ontario

As veterinary science developed and disseminated throughout society, popularizers developed new approaches to meet farmers' demand for accessible livestock treatments. Some veterinarians, such as Dr. George Bell, recognized the efforts of experiential practitioners to address the gap in livestock healthcare caused by limited access to veterinarians in rural communities. In response to this demand, Dr. Bell used his institutional training in veterinary medicine to provide pre-mixed medications. These pre-mixed or patent medications offered solutions for the limited availability of certain drugs and ensured quick access in emergencies. However, the development of a patent medicine was also a market opportunity for private, profit-seeking enterprises. Although some professional veterinarians criticized Dr. Bell's decision to profit from medications administered by farmers, his business thrived due to the high demand for his products. An ongoing debate brewed among veterinarians regarding the effectiveness of certain patent medicines. While some

veterinarians questioned their usefulness, others recommended that farmers keep them on hand. Despite the controversy, many farmers and livestock owners credited their success in maintaining livestock health to the rapid treatments provided by Dr. Bell, especially when veterinary services were unavailable or medicines required significant time to prepare.

Dr. Bell, a professional veterinarian who graduated from OVC in 1880, recognized the need to support farmers who were increasingly investing in livestock farming through the turn of the twentieth century. Before becoming the head of the new veterinary college at Queen's University in 1895, he gained valuable experience working as a veterinarian on a reputable horse farm in Erie, Pennsylvania, which housed several hundred horses. This background allowed him to develop, market, and distribute a medication that filled farmers' and livestock breeders' demands for a substance that would treat common injuries and diseases before veterinarians were readily available.

The first mention of Dr. Bell's Wonder Medicine in *The Farmer's Advocate and Home Magazine* occurred on April 16, 1908. Here, the editor of the journal stated that "many hundreds of livery owners in the United States and Canada [had used the medicine] in the last twenty years" and testified to its "marvellous curative powers."[159] One testimonial from Antoine Wendling, a Canadian "horsemen," included comments about its ability to treat any ailment affecting horses and that it was the writers "privilege to use, or see others using" it.[160] This brief write-up recorded Dr. Bell's qualifications, "V.S. [Veterinary Surgeon], D.V.D.S.," possibly Doctor of Veterinary Dental Surgery, on the first line of the article, before referencing the tried-and-true nature of his medicine and work as a veterinarian.[161] The article finished by soliciting agents who were "wanted in every county."[162]

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[159] *The Farmer's Advocate and Home Magazine* XLIII, no. 812 (April 16, 1908): 698.
[160] *The Farmer's Advocate and Home Magazine* XLIII, no. 812 (April 16, 1908): 698.
[161] *The Farmer's Advocate and Home Magazine* XLIII, no. 812 (April 16, 1908): 698. The designation V.S. stands for Veterinary Surgeon. It was a well-recognized designation offered to licensing authorities following the completion of an institutional education. However, D.V.D.S. is not discussed in any of the primary or secondary sources consulted for this study. Following discussions with Lisa Cox, it is possible that George Bell was using an acronym for doctor of veterinary dental surgery, however his was not a recognized designation at the time.
[162] *The Farmer's Advocate and Home Magazine* XLIII, no. 812 (April 16, 1908): 698.

They invited "bright young men, general blacksmiths, and others desiring to take up this work" to correspond with Dr. Bell at 110 Clarence St., in Kingston.[163] Following this initial introduction to Dr. Bell's Veterinary Medical Wonder drug in *The Farmer's Advocate and Home Magazine*, advertisements followed in nearly every edition of the magazine and newspapers across Ontario.

Early advertisements for Dr. Bell's Wonder Medicine occupied a small portion of the page, squeezed between more prominent ads for livestock sales and other medications, such as Fleming's Lump Jaw formula.[164] Each of Dr. Bell's advertisements claimed that the medicine "cure[d] inflammation of the lungs, bowels, and kidneys," before stating that people considered it a "20th-century wonder."[165] However, by 1913, Dr. Bell's advertisements in *The Farmer's Advocate and Home Magazine* had evolved. The company added that in addition to curing inflammation, it also "cure[d] colic, coughs, colds, distemper, fevers, etc."[166] It encouraged readers to use the cure-all medication for most common ailments. As a result, its overall effectiveness, cost-efficiency, and popularity increased among livestock owners, who found they no longer needed to rely on veterinary services

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163 *The Farmer's Advocate and Home Magazine* XLIII, no. 812 (April 16, 1908): 698.
164 "Fleming's Lump Jaw Cure," *The Farmer's Advocate and Home Magazine* XLIII, no. 844 (November 25, 1908), 559.
165 *The Farmer's Advocate and Home Magazine* XLIII, no. 816 (May 14, 1908): 879; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLIII, no. 821 (June 18, 1908): 1047; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLIII, no. 829 (August 13, 1908): 1287; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLIII, no. 831 (August 27, 1908): 1342; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLIII, no. 832 (September 3, 1908): 1385; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLIII, no. 844 (November 26, 1908): 1818.
166 "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1068 (March 13, 1913): 499; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1071 (April 3, 1913): 657; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1073 (April 17, 1913): 744; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1076 (May 8, 1913): 884; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1082 (June 19, 1913): 1127; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1095 (September 18, 1913): 1658; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1072 (October 16, 1913): 1817; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1074 (October 30, 1913): 1906; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1075 (November 6, 1913): 1948; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1076 (November 13, 1913): 1994; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1079 (December 4, 1913): 2118; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1082 (December 25, 1913): 2309.

for most common conditions. Instead, they could obtain medicine developed by a professional veterinarian and administer it quickly to their livestock themselves.

Eric Boyle contends that "laboratory science" claimed that its "practical relevance in medical therapeutics" challenged "quack" schemes based on empirical knowledge. He further argues that what was "known with certainty, and rationally explained" became scientific knowledge of therapeutics. This transition saw a shift in medical communities, where disease was considered separately from humans' "natural balance" with their surrounding environments.[167] By emphasizing their experience with scientific knowledge, Dr. Bell's professional experience became a valuable part of the company's promotional material.

Dr. Bell also encouraged farmers to sample his product. In every advertisement published in 1913, he also offered a promotion, disbursing 10,000 $1.00 bottles of the Veterinary Medical Wonder Drug for free to "horsemen who [would] give The Wonder a fair trial."[168] As the drug became more popular, in 1914, the company began asking readers to send ten cents along with their address to cover costs "for mailing, packing, etc."[169] This promotional offer for a sample bottle of Dr. Bell's Wonder Medicine continued through 1915. By 1917, the company began asking for

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[167] Boyle, *Quack Medicine*, 9.

[168] "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (March 13, 1913): 499; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (April 3, 1913): 657; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (April 17, 1913): 744; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (May 8, 1913): 884; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (June 19, 1913): 1127; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (September 18, 1913): 1658; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (October 16, 1913): 1817; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (October 30, 1913): 1906; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (November 6, 1913): 1948; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (November 13, 1913): 1994; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (December 4, 1913): 2118; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* (December 25, 1913): 2309.

[169] "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* XLIX, no. 1158 (December 3, 1914): 2071.

twenty-five cents to cover costs.[170] The shift from offering free samples to covering increased shipping costs to remote areas likely reflects the drug's growing popularity.

In 1918 and 1919, Dr. Bell's guarantee for those trying their trial bottles continued, as did his call for agents to promote and distribute the Wonder Medicine. However, in 1919, advertisements for Dr. Bell's Wonder Medicine in *The Farmer's Advocate and Home Magazine* had ceased. At this time, Dr. George Bell took on the role of milk inspector in Kingston and his son Carlton Bell became president of the wonder drug business.[171] Around this time, Dr Bell's company continued printing instructions and began disseminating livestock health pamphlets. Throughout its years of advertising in *The Farmer's Advocate* and its transition to distributing instructional and promotional pamphlets alongside its medications, Dr. Bell's company increased its supply to customers throughout Canada and internationally from Kingston, Ontario.

Following the new *Veterinary Practice Act* in 1920 (see Chapters Two and Five), a clause regarding prior experience and income as a practitioner allowed some to gain certification without institutional training. In 1931, the provincial government amended the Act to stipulate that only those trained at professional institutions could receive accreditation from the Minister of Agriculture after the Veterinary Practice Board had verified that the "courses [they took] were equal in standards of admission and instruction to those of the OVC." This amendment granted professionally trained veterinarians and members of the Ontario Veterinary Association their long-sought-after authority to self-regulate the profession, control licensing, and cease the practices of those who did not have institutional training.[172] The development changed the face of veterinary medicine. However, it did

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[170] "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* L, no. 1206 (November 4, 1915): 1725; "Dr. Bell's Veterinary Medical Wonder," *The Farmer's Advocate and Home Magazine* LII, no. 1291 (June 21, 1917): 1030.
[171] Susanna McLeod, "Veterinary Cure-All Turned into Quackery," *The Kingston Whig Standard*, April 29, 2020. https://www.thewhig.com/opinion/columnists/veterinary-cure-all-turned-into-quackery.
[172] Government of Ontario, *Statutes of Ontario*, 1931, Chapter 44, Section 11, reprinted in Barker and Evans, *Century One*, 133.

not happen overnight. In the early twentieth century, weak legislation was accompanied by minimal enforcement, and professional conflicts slowed professional growth.[173] Nor did the new law apply to Dr. Bell, an institutionally trained veterinarian. Nevertheless, many disputed Dr. Bell's commercialization of veterinary medicines.

Dr. Bell helped fill a void in veterinary care. Though many institutional veterinarians challenged his "entrepreneurial spirit" and monetization of medicines administered without veterinary oversight, Dr. Bell maintained his licence after leaving his position as head of the veterinary program at Queen's University in 1897. His successor and adversary, Dr. A. P. Knight, replaced Dr. Bell (as Chapter One discusses). He focused on elevating professional veterinary standards before the institution closed two years later. Like experiential expert authors of popular animal health manuals, Dr. Bell recognized a need for everyday livestock health knowledge and quick remedies.

By the 1920s, advertisements for patent medicines included more scientific imagery to "appeal to doctors and consumers."[174] Dr. Bell's pamphlets illustrated, though not as detailed as Gardenier's anatomic drawing (see Chapter One), how to identify and treat livestock health issues using his Wonder Medicine. These pamphlets used sensory depictions and images to help farmers identify specific health problems and guide them in administering the cure-all medicine without the help of a veterinarian. For example, to treat colic, acute indigestion, or inflammation of the bowels, the company included the images in Figure 3.4 to interpret livestock suffering. They noted that horses traditionally pointed their nose towards their ailments, positioned their body, or exhibited behaviour depicted in the images according to their suffering during different stages.[175] Dr. Bell's

[173] Barker and Evans, *Century One*, 146.
[174] Boyle, *Quack Medicine*, 49.
[175] George Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock (With Illustrations), 1933" (A2019.017, PF2157F1I2, Grey Roots County Archives, Grey County), 5.

pamphlets included brief descriptions of anatomy and symptoms to help livestock. Following diagnosis, farmers could then administer swift treatment themselves because "Delays [in administering treatments] [we]re always dangerous" and costly, the company argued.[176] Dr. Bell, similar to experiential experts Thompson, Gardenier, and Hodgins, placed a high value on time and proximity, unlike many of his professional colleagues. He, and, later his company, aimed to sell a product that Dr. Bell had developed during his time working as a professional veterinarian, directly to farmers. Essentially, the company advertised a product that promised access to advances in professional veterinary medicine, yet was based on the founder's own professional experiential knowledge, which answered the demand for cost-effective solutions and filled a gap left when veterinarians were unavailable.

Figure 3.4: Stages of colic, indigestion, and inflammation of the bowels and treatment applications depicted in Dr. Bell's *Prevention, Diagnosis and Treatment of Common Disease of Live Stock* manual

Source: George Bell, "First Aid for Sick Animal, Sixth Edition" (A2012.084, Box 1, Collection of Sydney Jackson, Grey Roots County Archives, Grey County); and Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 6, 7, 8, 9, 10, and 14.

[176] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 39.

Under the supervision of Carlton Bell, by the sixth edition of the livestock health pamphlet, the company had added twenty-one veterinary medicines, sixteen household products, five toilet preparations, seven extracts and flavours, and four miscellaneous products to its inventory. Available by mail or through local druggists and merchants, the company's shift from directly distributing the popular cure-all medicine to farmers and individual sales agents to having local stores stock their products demonstrates the increasing popularity of the brand in rural communities.[177]

Despite these transitions, Dr. Bell's company maintained its original goals. Carlton Bell wrote a tribute to his father following his death in 1927. "In compliance with the wishes of the late Dr. George Bell," he explained that the company would continue to provide a "book adaptable to [the readers] use so that they may render efficient service to their livestock with profit to themselves." He clarified that "where Dr. Bell's formulas [were] not suitable [the reader was] plainly told what other aid or aids [were] necessary, and if a veterinarian [was] not obtainable [the company gave the reader] the next best treatment."[178] For example, they also encouraged readers to have their Veterinary Surgeon inoculate the animal (discussed further below).

Patent medicine promoters had "long sold the fear of suffering and death" alongside the "hope of well-being and health."[179] Carlton Bell continued this approach even after Dr. Bell's death. The company reassured readers that by using its Veterinary Medical Wonder, a farmer could cure cattle infected with white scours, a disease in young cattle often caused by early exposure to *E. coli* or *Salmonella*, and save all animals, including horses, from disease and pain.[180] By the 1920s, within the "mystique of a growing cult of consumption," patent medicine producers further capitalized on

[177] Bell, "First Aid for Sick Animal, Sixth Edition," 64.
[178] Bell, "First Aid for Sick Animal, Sixth Edition," 3.
[179] James Harvey Young, *The Medical Messiahs: A Social History of Health Quackery in Twentieth-Century America* (Princeton: Princeton University Press, 1992), 446–448, in Boyle, *Quack Medicine*, 97.
[180] Bell, "First Aid for Sick Animal, Sixth Edition," 44; Boden and Andrews, *Black's Veterinary Dictionary, 22nd Edition*, 954.

strategies "designed to appeal to the emotions of consumers."[181] In both advertisements below (Figures 3.5 and 3.6), Dr. Bell's company recognized the need for cost-saving measures. It claimed that millions of dollars per year were lost when veterinary services were not available.[182] In cases where this was not possible, the company instructed farmers to administer a specific number of drops dependent on the animal and disease.[183] Dr. Bell's marketing strategy claimed, though likely exaggerated, that its "Wonder Medicine" appealed to farmers' desire for increased efficiency and reduced animal pain and suffering before veterinarians were readily available.[184]

Figure 3.5: Advertisement for Dr. Bell's Veterinary Medical Wonder, appealing to cattle farmers

Source: Bell, "First Aid for Sick Animal, Sixth Edition," 44.

[181] Boyle, *Quack Medicine*, 97.
[182] Bell, "First Aid for Sick Animal, Sixth Edition," 18 and 44.
[183] Bell, "First Aid for Sick Animal, Sixth Edition," 44. For example, "two or three doses [of Dr. Bell's Veterinary Medical Wonder] on the [cow's] tongue on the first appearance of the disease" or "one to three doses of a few drops each, in the horse's mouth, [to] bring prompt, sure relief, in even the most advanced cases," similarly to the events described by Mrs. Bert Bush in her prize-winning letter below. Bell, "First Aid for Sick Animal, Sixth Edition," 44 and 18.
[184] Bell, "First Aid for Sick Animal, Sixth Edition," 18.

Figure 3.6: Advertisement from Dr. George Bell's livestock health pamphlet

Source: Bell, "First Aid for Sick Animal, Sixth Edition," 18.

In addition to promotional material, Dr. Bell's company solicited testimonials in return for a prize. Testimonials appeared in advertisements for all types of goods and services during this period. In response, the American Medical Association (AMA) made investigating fraudulent claims a "top priority." Similarly, in Canada, the government implemented the *Proprietary or Patent Medicine Act* in 1908 to regulate the industry by imposing labelling requirements. However, it did not initially address advertising. In 1919, an amendment focused on the prohibition of "false, misleading, or exaggerated claims whether made on labels, wrappers, circulars or in any advertisement."[185] Though many patent medicine producers were accused of publishing "flamboyant and extravagant claims in the form of testimonials," not all testimonials were produced maliciously.[186] Rather, "many well-respected doctors" also produced patent medicines of their own or offered "testimonial support for

[185] Paul Soucy, "The Proprietary or Patent Medicine Act of Canada," *Food, Drug, Cosmetic Law Journal* 8, no. 11 (1953): 706–710. Finally, in 1934, an amendment included a list of health ailments and diseases that became illegal for patent medicine producers to advertise as food or drug treatments. However, this list was never established. Soucy, "The Proprietary or Patent Medicine Act of Canada," 710.
[186] Boyle, *Quack Medicine*, 59.

questionable remedies."[187] Dr. Bell's professional reputation and approach to veterinary medicine existed in this grey area between the value of experience and formal veterinary practices. Consequently, a critical examination of this "anecdotal evidence" offers insight into how patent medicine producers viewed their relationship with farmers and professional veterinarians and how they marketed their products despite regulatory restrictions.[188] Dr. Bell's relationship with farmers, consumers, and his professional colleagues provides unique insight into how consumer demand, or in this case, farmers' demand, for his product influenced animal healthcare practices in rural communities.

Dr. Bell's contest rules outlined "every customer of Dr. Bell's Products has gratifying experiences, the telling of which will help others. Tell Yours! Win a Prize! State facts."[189] The instructions also reassured consumers that "Fancy writing, or grammar, or punctuation [would] not [be] considered in judging."[190] This initiative helped Dr. Bell's company bridge the gap between professional veterinarians and farmers, including those who may have lacked formal education. It also sought to appeal to farmers' sense of credulity when faced with few other options for maintaining their livestock's health.

In a subsequent pamphlet, a two-page advertisement contained a letter from the previous winner describing the Wonder Medicine as a "Phenomenal Veterinary Creation" before explaining how the farmer, E. Youngman, and his neighbours had relied on the medicine to treat horses with colic and cattle with white scours and indigestion using both Dr. Bell's Cow Physic and the Wonder Medicine. Dr. Bell's, like other companies, likely selected the best testimonials in an effort to persuade future customers to purchase its products. In this ad, the farmer argued that Dr. Bell's

[187] Boyle, *Quack Medicine*, 45.
[188] Boyle, *Quack Medicine*, 54–55.
[189] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," Cover.
[190] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 32–33.

medicine encouraged a runt piglet to consume food and prevented its death while also turning a "ravenous" dog into a healthy animal with a "silky" coat.[191] The Wonder Medicine offered an alternative to home remedies such as "salts and ginger."[192] The farmer determined that to treat four cows, six spring calves, a puppy, one spring pig, and two mares, who he "valued" at $375.00, he used six bottles of Veterinary Wonder ($6.00) and five boxes of Bell's Cow Physic ($2.50), for a total of $8.50 in expenses. Therefore, according to Dr. Bell's, the farmer contends that the treatment was a cost-effective alternative to seeking veterinary medicine in cases where the farmer quickly recognized when livestock were suffering and feared their death.[193] Using a selection of top testimonials, Dr. Bell aimed to address farmers' needs for maintaining animal health in a cost-effective and profitable way.

Another promotional letter, written by Mrs. Bert Bush in 1939, outlined an incident where a horse suffered in "agony," and the closest veterinarian was fourteen miles away—the farmer told his wife, "Vet! Absolutely no. She'll be dead before he could get here."[194] The letter also recounted incidents where farmers cured cattle, pigs, and poultry using Dr. Bell's Wonder Medicine. Like the remote settlers discussed in Davies's study, Mrs. Bush described hanging her copy of Dr. Bell's booklet in her kitchen to quickly retrieve in the case of an animal's illness—"whenever an animal has anything wrong, run to it for information. It [was] just like having a vet in the home."[195] Promotions advocating for testimonials likely encouraged some readers to exaggerate or tailor their testimonials to win monetary prizes or bottles of Dr. Bell's medicine. However, the drug's popularity shows that these testimonials may hold some credence. They are also evidence of Dr. Bell's commercial

[191] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 32–33.
[192] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 33.
[193] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 33.
[194] Bell, "First Aid for Sick Animal, Sixth Edition," 32.
[195] Bell, "First Aid for Sick Animal, Sixth Edition," 33.

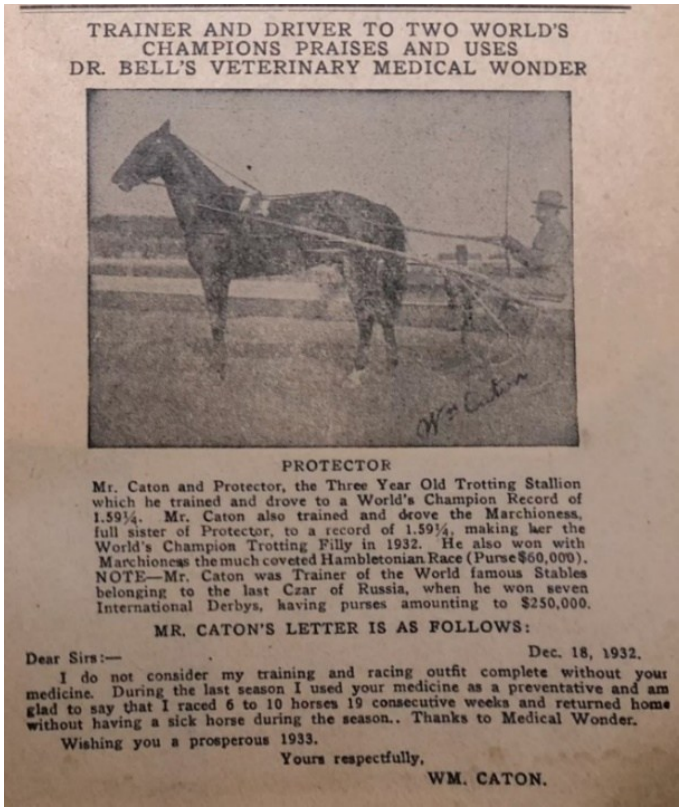
aspirations to answer demands for livestock health treatments in rural communities without veterinarians.

In addition to testimonials from those treating livestock on farms, Dr. Bell's company included references from veterinarians and renowned breeders across Canada. One such testimonial, under headings "A Drop in Time Saves Nine" and "The Animal "Life-Saver," included a picture of Mr. Caton "driving Protector," a stallion who became the World's Champion of Trotting in 1929 and 1932 (Figure 3.7).[196] In a letter below, Mr. Canton supposedly asked Dr. Bell's company to send a dozen bottles of Medical Wonder to Nello Branchini in Milan, Italy, following his purchase of Marchioness (Protector's brother), because, as the advertisement stated, he did "not consider [his] training and racing outfit complete without [the] medicine."

Throughout his last racing season, according to Dr. Bell's, Mr. Canton administered the medicine as a preventative and "was glad to say that [he] raced 6 to 10 horses 19 consecutive weeks and returned home without having a sick horse during the season."[197] Their racing success provided some prestige, much like endorsements today.

[196] Bell, "First Aid for Sick Animal, Sixth Edition," 22–23; Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 22–23.
[197] Bell, "First Aid for Sick Animal, Sixth Edition," 23; Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 23.

Figure 3.7: Testimonial from Dr. George Bell's livestock health pamphlet



TRAINER AND DRIVER TO TWO WORLD'S CHAMPIONS PRAISES AND USES DR. BELL'S VETERINARY MEDICAL WONDER

PROTECTOR

Mr. Caton and Protector, the Three Year Old Trotting Stallion which he trained and drove to a World's Champion Record of 1.59¼. Mr. Caton also trained and drove the Marchioness, full sister of Protector, to a record of 1.59¼, making her the World's Champion Trotting Filly in 1932. He also won with Marchioness the much coveted Hambletonian Race (Purse $60,000). NOTE—Mr. Caton was Trainer of the World famous Stables belonging to the last Czar of Russia, when he won seven International Derbys, having purses amounting to $250,000.

MR. CATON'S LETTER IS AS FOLLOWS:

Dear Sirs:— Dec. 18, 1932.

I do not consider my training and racing outfit complete without your medicine. During the last season I used your medicine as a preventative and am glad to say that I raced 6 to 10 horses 19 consecutive weeks and returned home without having a sick horse during the season.. Thanks to Medical Wonder.

Wishing you a prosperous 1933.

Yours respectfully,

WM. CATON.

Source: Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 23.

A full-page testimonial from "The Repository," a well-known horse sales stable in Canada and the United States, referenced using the medication for horses at its stables and selling the medication to patrons.[198] Another testimonial from "Hemlock Park Stock Farm," advertised as "the largest holstein breeder in Ontario," insisted that they used six bottles of Dr. Bell's Veterinary Medical Wonder every month in addition to Dr. Bell's Wonder Cow Physic, Dr. Bell's Garget Remedy, and Dr. Bell's Veterinary Ointment, to cure disease contracted during transport or to replenish a regular milk supply. In the advertisement, the company advocated for the use of multiple

[198] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 28; Bell, "First Aid for Sick Animal, Sixth Edition," 28.

medicines and gave examples of how and when they treated cattle who had contracted pneumonia and other diseases.[199]

A "prominent druggist" wrote that farmers valued the medicine so much that one farmer claimed "he would not go without it if it cost him ten times the price."[200] A licensed veterinarian, Dr. J. P. Burke, V.M.D, "certif[ied] that [he had] proven the merits of Dr. Bell's Medical Wonder in cases of Colic, Fever, and Chills, etc." The veterinarian outlined that he used it on horses, cattle, and pigs, and "if it did not give results [he] would not use or recommend it to anyone else; this medicine is pure, safe and sure, the best and only one a man owning stock should ever buy and should never be without at least one bottle in his stable."[201] When combined with the frequent discovery of old Dr. Bell's bottles, as mentioned at the beginning of this chapter, testimonials shed light on the instructions provided by Dr. Bell for the widespread use of their cure-all medicine in treating various animals suffering from common ailments, despite some reservations from institutional veterinarians.

As a professional veterinarian, Dr. Bell also advised farmers that there were particularly dreadful circumstances when calling for a veterinarian was worth the associated costs. Presumably, this would have helped farmers determine when to invest in veterinary services. Dr. Bell's recommended calling if the animal's condition did not improve: if a horse's urinary troubles did not improve after treatment with the Veterinary Medical Wonder, if a horse was suffering from "blind staggers" or inflammation in the brain causing "excitement and madness," during the removal of the placenta and womb inversion within twenty-four hours after a birth or other birthing issues, and

[199] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 43; Bell, "First Aid for Sick Animal, Sixth Edition," 43.
[200] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 50; Bell, "First Aid for Sick Animal, Sixth Edition," 50.
[201] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 31; Bell, "First Aid for Sick Animal, Sixth Edition," 31.

other instances when the complexity or severity of animal ailments required professional treatment.[202]

The company also outlined instances where farmers should own particular instruments because quick treatments were more pertinent than veterinarians' experience. For example, to relieve bloating, Dr. Bell's manual recommended that farmers keep a trocar and cannula on hand, tapping the instrument into a cow "midway between the last rib and the point of the hip."[203] If absolutely necessary, the book recommends using a "clean pocket knife" instead, outlining that this procedure should be undertaken immediately "before the help of a veterinarian c[ould] be obtained" and "only when suffocation seem[ed] imminent."[204] The company combined Dr. Bell's institutional training in veterinary medicine with his desire to provide farmers with an opportunity to act immediately. It recognized the need for farmers to administer quick treatments without a veterinarian and to know when to call a veterinarian because their services were necessary to limit suffering or livestock deaths. However, professional veterinarians objected to Dr. Bell's advice to farmers. Veterinarians were commercial competitors of companies like Dr. Bell's company. Consequently, Dr. Bell's advice undermined the efforts of professional veterinarians to meet the economic demands for animal healthcare. There were risks involved in advising farmers to forgo the professional expertise of a veterinarian, and instead use this so-called wonder medicine in place of that expertise. Even though Dr. Bell included recommendations to refer to a veterinarian in particular circumstances, he also

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[202] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 11, 13, 26, 29, 30, 31, 44, 45, 48, 53, 54, 58, 60. A probang is a thirty to forty-cm-long flexible rod with a sponge at the end to remove obstructions or foreign bodies from the esophagus or larynx. "Probang," *Merriam-Webster.com Medical Dictionary*, Merriam-Webster, https://www.merriam-webster.com/medical/probang.

[203] A trocar is a sharp-pointed tube inserted into a body cavity to remove fluid. A cannula is a thin tube, often connected to a trocar, to remove fluid from a body cavity. "Trocar," *Merriam-Webster.com Dictionary*, Merriam-Webster, https://www.merriam-webster.com/dictionary/trocar; "trocar," *Cambridge Dictionary* (Cambridge: Cambridge University Press & Assessment, 2025). https://dictionary.cambridge.org/dictionary/english/trocar; "Cannula," *Merriam-Webster.com Dictionary*, Merriam-Webster, https://www.merriam-webster.com/dictionary/cannula; "cannula," *Cambridge Dictionary* https://dictionary.cambridge.org/dictionary/english/cannula.

[204] Bell, "Prevention, Diagnosis and Treatment of Common Disease of Live Stock, 1933," 42.

suggested that farmers not go to veterinarians and manage animal health problems themselves, but only seek out veterinary services if those problems became more complicated. Despite these concerns, Dr. Bell's livestock health advice, which remains plentiful in archives across Ontario, bridged a gap between farmers and veterinarians. The cure-all medicine company sought to overcome professional boundaries by providing farmers with a treatment option before veterinarians were available in rural communities. Bell's pamphlets equipped farmers with a means to treat common livestock health ailments or emergencies before veterinarians could attend to the animal.

Similar to Canada at the time, in the United States throughout the 1910s, pressure built to regulate medical advertisements. The AMA's Bureau of Investigation worked with advertising reformers from government agencies and popular publications to exchange information about "fraudulent claims, misbranding, [and] expert testimony in court cases."[205] AMA urged newspaper, periodical, and magazine editors to consider the long-term consequences of printing advertisements for "quack" medicines. It argued that publications that had removed fraudulent advertisements "had gained in not only self-respect but also in the respect of readers."[206] However, the prevalence of long-term advertisements and their subsequent revenue for some medicines in *The Farmer's Advocate* and experiential experts' recommendation for their use is evidence of how some patent medicine companies appealed to farmers with for cost-effective and timely treatment options. The critique from veterinarians was that these products were either fraudulent or marginally useful at best and misled farmers. However, as physicians noted in a 1907 edition of the *Dominion Medical Monthly*, not all patent medicines were ineffective.[207] If farmers were not receptive to these advertisements or did

[205] Boyle, *Quack Medicine*, 43.
[206] Boyle, *Quack Medicine*, 41.
[207] "The Federal Proprietary and Patent Medicine Act," *The Dominion Medical Monthly and Ontario Medical Journal* 28, no. 3 (March 1907): 138–139.

not find these medicines useful, it is possible that the Weld family (editors of *The Farmer's Advocate*) or other experiential experts who sought to provide only tried-and-true methods for farmers, would not have supported their use. Nevertheless, it is important to note that the Welds were a publishing family, and their advertisement of Dr. Bell's products does not necessarily indicate an endorsement. Companies like Dr. Bell's were advertisers and important sources of revenue for the financial sustainability of this publication and other publications at the time. The continued publication of these ads does not indicate that these products were practical, effective, or even popular among farmers. Instead, they are indicative of the company's willingness to spend money on advertising and the publisher's willingness to accept revenue in exchange for publishing health ads directed at Canadians who were concerned about the state of public health and the efficacy of veterinary medicine.[208]

After decades of Dr. Bell distributing professional veterinary advice and the sale of Dr. Bell's cure-all Wonder Medicine, the United States reprimanded Dr. Bell's company and condemned the product to destruction. Harry L. Brown, Acting Secretary of Agriculture, determined that bottles of Dr. Bell's cure-all Wonder Medicine sent to Seattle and Dallas contained 63 to 65 percent alcohol, unlike the 40 percent claimed on the label. These samples consisted of alcohol, "water, and extracts of plant drugs including aloes, sassafras, capsicum, nux vomica, and mydriatic drugs such as scopola, stramonium, and/or belladonna."[209] The U.S. Food and Drug Administration (USFDA) contended that the bottle labels were "incorrect and inconspicuous," misrepresenting the amount of alcohol contained.[210] Though each of these chemical and plant-based substances were discussed in popular

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[208] Rutherford, *A Victorian Authority: The Daily Press in Late Nineteenth-Century Canada*, 121.
[209] "26975. Misbranding of Dr. Bell's Veterinary Medical Wonder. U.S. v. 9 ¾ Bottles and 57 Bottles of Dr. Bell's Veterinary Medical Wonder. Default decrees of condemnation and destruction. (F. & D. nos 38405, 38421. Sample nos. 2914-C, 13538-C," *Food and Drug Act, Notices of Judgement: Index to Nos. 10001-20000* (United States Food and Drug Administration, 1936): 443.
[210] "26975. Misbranding of Dr. Bell's Veterinary Medical Wonder. U.S. v. 9 ¾ Bottles and 57 Bottles of Dr. Bell's Veterinary Medical Wonder. Default decrees of condemnation and destruction. (F. & D. nos 38405, 38421. Sample nos. 2914-C, 13538-C," *Food and Drug Act*, 443.

animal health manuals and Materia Medica courses at OVC for their beneficial attributes treating various ailments, a misrepresentation in the amount of one substance saw the wonder medicine discarded.[211] USFDA asserted that the medicine was "misbranded" and the company had made false claims about its "curative and therapeutic effects."[212] This is significant evidence that the product itself might not have been effective during Carlton Bell's period of oversight. Dr. George Bell's medicines certainly had a market, and it is clear that consumers purchased them; however, it is unclear whether this product could do everything the company claimed it could do. At the time, government officials in both Canada and the United States were focused on increasing regulation in an effort to eliminate unscrupulous companies that were exploiting an unregulated market by selling snake oil.

After this ruling in 1936, "the once-respected and prosperous company was labelled as quackery."[213] However, many individuals continued to rely on experiential advice from family and neighbors as they sought to purchase Dr. Bell's Wonder Medicine to treat their livestock, even as recently as 2005, despite its decline in popularity in Canada.[214] Despite the USFDA's disapproval and condemnation of Dr. Bell's medicine, farmers and livestock breeders continued to rely on experiential evidence over contemporary professional medical and scientific knowledge.

The prevalence of Dr. Bell's livestock health pamphlets and bottles in museum and archive collections in Ontario, and globally, is evidence of its distribution. It indicates that some farmers

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211 Zavitz, "Materia Medica," 1885; Colman, "Materia Medica,"; Shepherdson, "Materia Medica," 1913–1915.
212 "26975. Misbranding of Dr. Bell's Veterinary Medical Wonder. U.S. v. 9 ¾ Bottles and 57 Bottles of Dr. Bell's Veterinary Medical Wonder. Default decrees of condemnation and destruction. (F. & D. nos 38405, 38421. Sample nos. 2914-C, 13538-C," *Food and Drugs Act*, 443–444.
213 "Dr. Bell's Veterinary Medical Wonder," Dr. Michael A. Chiong Patent Medicine Collection, *Museum of Health Care at Kingston*, https://mhc.andornot.com/en/permalink/artifact2917; Susanna McLeod, "Veterinary Cure-All Turned into Quackery," *The Kingston Whig Standard*, April 29, 2020, https://www.thewhig.com/opinion/columnists/veterinary-cure-all-turned-into-quackery; Cox, Curator, Barker Veterinary Museum, Ontario Veterinary College.
214 Online agricultural forums show how popular this drug was. One example shows people from Ontario, Texas, California, and Colorado commenting on its effectiveness. Some people were also still looking to buy replacements as late as 2005. Aaron, "Dr. Bell's Veterinary Medical Wonder - Bull Session," Forum, *Ranchers.net*, February 10–June 4, 2005, https://ranchers.net/forum/viewtopic.php?t=2313.

welcomed the company's approach to treating livestock. Dr. Bell prioritized quick treatments for common livestock health challenges over the need for rigorous standards and training among those treating animals (not unlike OVC within the context of other professional veterinary institutions, as discussed in Chapter Two). He sought to fulfill a demand for veterinary medicine before veterinarians became accessible, or in cases of emergency, when farmers' administration of urgent treatments was paramount.

While professional veterinarians often criticized the practices of farmers and experiential practitioners, many of the treatments they used contained ingredients and mixtures similar to those employed by veterinarians and sanctioned by veterinary institutions. This overlap between experiential and institutional knowledge persisted for some time and, in the end, played a role in the non-linear development of veterinary medicine. The long battle for the standardization of veterinary medicine included varying laws and amendments, as outlined in Chapter Two. These reforms sought to eliminate the role of experiential health practitioners who helped farmers manage common livestock healthcare practices. As more veterinarians underwent institutional education, this became possible. However, before veterinarians populated the countryside, farmers relied on home remedy recipes, "quack" medicines, and proprietary and patent medicines to treat livestock.

Chapter 4: Coordinating Efforts: Limiting the Spread of Zoonotic Diseases

Before the veterinary profession took hold in rural Ontario, farmers took care of the health of their livestock. They had little veterinary training, but they did have experiential knowledge and the help of neighbours, which they drew on to detect, isolate, and stop disease from spreading to other animals, and even sometimes humans. As the spread of infectious diseases in the late nineteenth and early twentieth centuries raised concerns by provincial and federal governments, veterinarians and agricultural officials developed and amended laws and policies to reflect advances in veterinary science that would protect public and livestock health and facilitate economic growth. As historians Karen Brown and Daniel Gilfoyle argue, "the emergence of veterinary bureaucracies … [throughout the late nineteenth century] was a response to official attempts to increase the efficiency of states' administrations and facilitate economic development in order to enhance their international influence and power."[1] Indeed, the veterinary profession played a significant role in limiting the spread of fatal, contagious zoonotic diseases. Despite efforts to separate themselves from experiential practitioners—as we saw in Chapter Two—the success of veterinarians from the Ontario Veterinary College (OVC) and the provincial government in eradicating these diseases was due to collaboration with experienced practitioners and farmers. By disseminating new regulations and advances in veterinary science to those who worked directly with livestock, professional veterinarians helped to accelerate efforts to limit the spread of disease. This coordinated approach was vital to safeguarding the health of humans and livestock while protecting Canada's economic development and the industrialization of livestock farming.

Zoonotic diseases posed a significant risk during this period, as animals were an integral part of daily human life. This close relationship facilitated the transfer and spread of contagions fatal to

[1] Karen Brown and Daniel Gilfoyle, *Healing the Herds: Disease, Livestock Economies, and the Globalization of Veterinary Medicine* (Athens: Ohio University Press, 2010), 5.

both humans and animals. In southern Ontario, veterinarians worked to disseminate information and responsibilities for limiting the spread of disease. However, this does not necessarily mean farmers lacked knowledge of disease and contagions or home remedies. In France, "Farmers were used to dealing with [diseases] and had developed empirical knowledge to limit their negative effects on the local economy. For example, they knew how to treat mild diseases or lesions using folk remedies, most often made with thyme or vinegar."[2] Historian Delphine Berdah contends that French farmers were equipped to deal with common diseases without government intervention or public health initiatives in the late nineteenth century.[3] In mid-nineteenth-century France, diseases were "not really perceived as a national problem, as animal products were mainly consumed locally and did not jeopardise trade."[4] Farmers had a close relationship with their livestock. They knew their behaviours and gave them names. And, they recognized the potential loss associated with widespread slaughter to contain the spread of diseases. By the early twentieth century, French veterinarians were aware that the "necessity of coping with the everyday life [and the close relationship that farmers] shared with their animals, far outweighed any fear of a long-term disease … They were well aware of the social recognition of empirical practitioners who offered cures for farm animals" that abstained from slaughtering infected livestock.[5] The French state and professional veterinarians recognized the ability of experiential experts and farmers to combat fatal zoonotic diseases, like glanders, without the need for widespread public health initiatives.[6] As

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[2] Luigi Morandi, Rapport sur l'emploi du thym et du serpolet, d'après le procédé de Luigi Morandi, contre la fièvre aphteuse, Milan, nd, as found in Delphine Berdah and Camille Noûs, "Veterinary Expertise, Public Health, and Animal Contagion: The Control of Bovine Tuberculosis in France and Britain, 1860–196," p. 115–134 in *Animal and Epidemic: Interspecies Entanglements in Historical Perspective*, eds. Axel Hüntelman, Christian Jaser, Mieke Roscher, Nadir Weber, vol. 2 *Animals in History* (Brill Deutschland GmbH: Böhlau, 2024), 119.

[3] In mid-nineteenth-century France, "the most liberal government ministers preferred animal inspection and isolation in ports over quarantine." They relied on empirical evidence and localized consumption rather than "state intervention in the realm of private stockbreeders." Berdah and Noûs, "Veterinary Expertise, Public Health, and Animal Contagion," 118, 119, and 120.

[4] Berdah and Noûs, "Veterinary Expertise, Public Health, and Animal Contagion," 119.

[5] Berdah and Noûs, "Veterinary Expertise, Public Health, and Animal Contagion," 127.

[6] Berdah and Noûs, "Veterinary Expertise, Public Health, and Animal Contagion."

livestock trade networks expanded in Canada, tensions grew between veterinarians and experiential practitioners.

Much like significant breakthroughs in human medicine, veterinary discoveries supported the development of state regulations. In the late nineteenth and early twentieth centuries, there was a notable increase in state involvement in regulating animal diseases, particularly zoonotic diseases, which can be transmitted from animals to humans. State regulations were dependent upon a veterinary profession that could diagnose and validate the presence of these diseases, enabling the implementation of measures, such as animal destruction, quarantines, or diagnostic testing, among other public health regulations and preventive measures. Consequently, the state and its regulations necessitated the establishment of a regulated veterinary profession. This elevated the status of professional veterinarians and undermined the status of amateur practitioners.

Competition and collaboration between institutions like the Louis Pasteur Institute in Paris, the Robert Koch Institute in Berlin, OVC in Canada (the first such school in the country), and foundational veterinary schools in Britain enabled ongoing developments that met the public health needs of different nations. However, implementing the latest advances in veterinary medicine posed a unique problem across North America in the late nineteenth and early twentieth centuries. For example, in Canada, it meant preventing disease on a large scale across distant rural communities, which made veterinary advancements, such as diagnostic formulas and vaccines, particularly appealing. Driven by a need to contain and prevent the spread of disease, state and institutional veterinarians developed research-based evidence that supported new public health initiatives. Their work would support veterinarians in identifying, treating, and preventing outbreaks while educating the public on the need to limit the spread of fatal, infectious zoonotic diseases. The consensus of germ theory drove the emergence of state regulations to control the spread of diseases, the development of policies for the destruction of animals, and the creation of quarantine systems,

among other public health regulations. The emerging scientific consensus regarding the spread of disease and the adoption of microbial science was a precursor to these regulations, and therefore to the increasing professionalization of veterinary medicine.

In their role as "working capital" in the late nineteenth and early twentieth centuries, livestock animals became "valuable enough to merit medical care and scientific research."[7] This value changed with the expansion of livestock industries, which propelled further study of the animals that humans relied on. This resulted in increased movement of horses and cattle from sparsely populated areas to urban markets and ports, warranting further attention to limiting the spread of disease, especially fatal zoonotic diseases, in densely populated cities.

Livestock moved west as settlements developed and horses, cattle, and swine moved from the west to ports further east (often Montréal) for trade. Animals, particularly several thousand horses, also moved through ports like Montréal to support Canadian efforts during the South African War, and hundreds of thousands moved to the front in the First World War. The movement of animals and humans—"by steamboat, railway, or by a trot across the border"—resulted in the spread of diseases. The number of outbreaks grew alongside increases in transportation over long distances in close quarters and "under stressful conditions."[8] Horses and humans, who shared "fundamental genetic building blocks conserved in a long process of mammalian evolution," were often exposed to disease in these shared environments.[9] This shared vulnerability underscored the importance of public health regulations.

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[7] Sherry Olsen, "The Urban Horse and the Making of Montreal, 1840–1914," in *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, eds. Christabelle Sethna, Joanna Dean, and Darcy Ingram (Calgary: University of Calgary Press, 2017), 75 and 74.
[8] Olsen, "The Urban Horse and the Making of Montreal, 1840–1914," in *Animal Metropolis*, 76.
[9] Olsen, "The Urban Horse and the Making of Montreal, 1840–1914," in *Animal Metropolis*, 77.

Early veterinary historians examined "historio-geographical pathology" to trace the paths of disease and navigate world history.[10] In his innovative work on the Great Epizootic of 1872–1873, environmental historian Sean Kheraj harnessed the power of modern mapping technologies to go a step further. His valuable insights into how disease rapidly spread within developing networks between urban centres in North America highlights how "historical biotic homogenization" in urban centres contributed to the spread of disease.[11] I shed light on instances that show how expanding networks helped to both spread disease and disseminate veterinary knowledge in rural communities, which would in turn help farmers eradicate zoonotic diseases.

In this chapter, I focus on two historically significant contagious diseases—glanders and anthrax. These incurable zoonotic diseases facilitated the early collaboration between experiential animal health practitioners and professional veterinarians, leading to the eradication of outbreaks that threatened both animals and humans in shared environments. I also highlight the effects of independent and cooperative initiatives by examining agricultural periodicals, popular manuals, newspapers, and reports from the Health of Animals Branch of the federal Department of Agriculture on the spread of these two diseases. These initiatives played a crucial role in disseminating advancements in veterinary science. My analysis underscores the necessity of access to professional veterinarians in combatting and eliminating the spread of contagious diseases, which not only affected animals but also the people who worked with them.

Scholars have examined how animal diseases such as equine influenza, foot-and-mouth, pleuro-pneumonia, rabies, and bovine tuberculosis spread rapidly, infecting both animals and humans in urban environments.[12] They have also explored the human–animal relationship that

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[10] D. A. Karasszon, *A Concise History of Veterinary Medicine* (Budapest: Akadémiai Kiadó, 1988): 420.
[11] Sean Kheraj, "The Great Epizootic, 1872–73: Networks of Animal Disease in North American Urban Environments," *Environmental History* 23 (July 2018): 507.
[12] Abigail Woods examines how industry, international policy, scientific progress, and agricultural practices shaped the spread of foot-and-mouth disease. See Abigail Woods, *A Manufactured Plague: The History of Foot-And-Mouth Disease in*

facilitated the spread of these diseases.[13] However, the challenge these diseases posed for veterinarians in the late nineteenth century remains underexplored. In Canada and Ontario, professional veterinarians acted in various roles that supported government efforts to contain and limit the spread of glanders and anthrax. Both zoonotic diseases posed a unique challenge for veterinarians because they were difficult to identify and diagnose, highly contagious, and quickly proved fatal.

In the nineteenth century, scientists, veterinarians, and physicians worked desperately to understand the contagious properties of glanders and anthrax. Although technological inventions like the microscope aided advances in veterinary science, the unknown nature of glanders and anthrax eventually necessitated preventive measures. This chapter illustrates how proximity to animals can expose humans to infectious contagions. As veterinary science advanced and an understanding of a contagion's dormancy period developed, practices slowly shifted to focus on prevention over cures. Abigail Woods asserts that "prevention was the historically contingent

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Britain (Oxford: Earthscan, 2013). For the development of trade restrictions for pleuro-pneumonia at the end of the nineteenth century, see Justin Katgner, Douglas Powell, Terry Crowley, and Karen Huff, "Scientific Conviction Amidst Scientific Controversy in the Transatlantic Livestock and Meat Trade," *Endeavour* 29, no. 2 (June 2005): 78–83. In a two-part chapter on rabies vaccines in Canada, Paul Varughese studies human vaccines and Christopher J. Rutty examines rabies vaccination among domestic animals in Canada from the 1910s to the 1960s. They note the success of vaccination programs in Canada for many human and non-human animals and how innovations helped to overcome practical challenges for vaccinating some species in the context of evolving attitudes toward immunization in Canada. Paul Varughese and Christopher J. Rutty, "Rabies Vaccines in Canada," in *Taking the Bite Out of Rabies: The Evolution of Rabies Management in Canada*, eds. David J. Gregory and Rowland R. Tinline (Toronto: University of Toronto Press, 2020), 255–275. To understand the complicated relationship between farmers and professional veterinarians, see Alan Olmstead and Paul Rhode's examination of farmers' resistance to government campaigns for tuberculin testing to eradicate bovine tuberculosis in the United States. Alan Olmstead and Paul Rhodes, "Not on My Farm! Resistance to Bovine Tuberculosis Eradication in the United States," *The Journal of Economic History* 67, no. 3 (2007): 768–809. For a look at bovine tuberculosis and its implication for the milk industry, see Lisa Cox, "Lesion Milkshakes, Markets, and Science: Bovine Tuberculosis in Canada," PhD Diss. (University of Guelph, 2007).

[13] For a general overview of animals' role as patients, experimental material, and transmitters of disease to humans and their relationship to human and veterinary medicine, see Abigail Woods, "Animals in the History of Human and Veterinary Medicine," in *The Routledge Companion to Animal-Human History*, eds. Hilda Kean and Philip Howell (London: Routledge, 2018), 147–170; and Joanna Swabe, *Animals, Disease and Human Society: Human–Animal Relations and the Rise of Veterinary Medicine* (London: Routledge, 2002). For a look at disease regulation in Canadian cities, see Sean Kheraj, "Urban Environments and the Animal Nuisance: Domestic Livestock Regulation in Nineteenth-Century Canadian Cities," *Urban History Review* 44, no. 1/2 (2015): 37–55. To discover how the animal–human relationship changed with advances in industrialization in the early twentieth century, see Susan D. Jones, *Valuing Animals: Veterinarians and Their Patients* (Baltimore: Johns Hopkins University, 2003).

product of particular social, political, and economic circumstances, which not only influenced perceptions of its importance, but also how it was defined and delivered."[14] Some studies look at preventive and curative measures to combat specific zoonotic diseases.[15] However, Woods' macro perspective focuses on veterinary, farming, disease, and political drivers, their "manifestations, and [the] outcomes of veterinary-led efforts to reorient British post-[Second World War] practice away from cure, and towards prevention."[16] Woods recognizes that historical continuity propelled the drivers that encouraged veterinary preventive medicine. However, similar drivers existed earlier than the 1930s, as Woods suggests.

Combatting an Ancient Zoonotic Disease: Glanders through the Turn of the Twentieth Century

Glanders is a fatal and incurable bacteriological disease caused by *Burkholderia mallei* that spreads quickly between humans and equines in close contact. In equines, the contagious disease manifests as a fever, nasal discharge, and skin ulcers. In humans, it presents with similar symptoms, accompanied by muscle aches, headaches, and chest pain. However, in both humans and animals, the disease can remain dormant, without visible symptoms, for days or weeks before proving fatal. Overcrowded markets, stables, and other environments allowed the glanders' contagion to spread, often through mucus, from infected equines to the humans and equines that came into contact with them and carnivores that ate infected meat.[17] Greek and Roman writers, such as Aristotle, Apsyrtus, and Vegetius, first recorded cases of glanders: Apsyrtus, first in 400 AD and Vegetius, in 500 AD.[18]

[14] Abigail Woods, "Is Prevention Better than Cure? The Rise and Fall of Veterinary Preventive Medicine, c.1950–1980," *Social History of Medicine* 26, no. 1 (February 1, 2013): 114.
[15] Many of these studies focus on the spread of diseases in Britain, France, and the United States, providing valuable insights into the global impact of zoonotic diseases. However, few studies examine the spread of zoonotic diseases from the veterinary perspective in Canada, representing a significant gap in the current research landscape.
[16] Woods, "Is Prevention Better than Cure? The Rise and Fall of Veterinary Preventive Medicine, c. 1950–1980," 129.
[17] J. B. Derbyshire, "The Eradication of Glanders in Canada," *The Canadian Veterinary Journal* 43 (September 2002): 722.
[18] J. H. Steele, "Glanders," *CRC Handbook Series in Zoonoses: Section A: Bacterial, Rickettsial and Mycotic Diseases*, vol. 1 (Boca Raton: CRC Press, 1979), 7 and 339.

French horseman Jacques de Sollysel first wrote about its contagious nature in 1664. In the early nineteenth century, French "country practitioner" Jean Hameau noted that when conducting post-mortems on glandered horses, scientists needed to practise extreme care because an "accident" could lead to "the most melancholy consequences and even death."[19] Unfortunately, a lack of precautions and early misunderstandings about the spread of glanders led to the death of scientists conducting experiments on infected horses.[20] However, as more scientists succumbed to glanders, more became aware of the disease's zoonotic nature.[21]

Throughout the nineteenth century, glanders inflicted horrific fatalities throughout the world. From 1847–1866, glanders consistently produced the highest mortality rate among the French Cavalry compared to diseases such as strangles or foot and mouth disease.[22] G. Terry Sharrer, a curator at the Smithsonian Institute, notes that in the 1880s, following a growing number of equine fatalities in Texas, army veterinarians fought glanders by employing the Hippocratic theory, which held that "for extreme illnesses extreme treatments are most fitting." For glanders, this entailed treating an infection by "spraying urine into the horse's nostrils and then forc[ing] warm chicken guts rolled in salt down its throat."[23] The belief was that only extreme, invasive measures and the use of unorthodox substances could combat a disease as severe as glanders. Not surprisingly, harsh treatments based on the Hippocratic theory proved ineffective.

T. Graham Balfour, a British physician renowned for his work with medical statistics in the late nineteenth century, argued that 45 percent of horses in the French army that died as a result of disease were infected with glanders. This was a significant finding, considering that "inflammation of

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[19] Wilkinson, *Animals & Disease*, 118.
[20] Wilkinson, *Animals & Disease*, 118–121.
[21] William Hunting, *Glanders: A Clinical Treatise* (London: H & W Brown, 1908), 11 and 90–98; Wilkinson, *Animals & Disease*, 118–123.
[22] T. Graham Balfour, "Vital Statistics of Cavalry Horses," *Journal of the Statistical Society of London* 43, no. 2 (1880): 257–258.
[23] G. Terry Sharrer, "The Great Glanders Epizootic, 1861–1866: A Civil War Legacy," *Agricultural History* 69, no. 1 (1995): 80–81.

the lungs and pleura," listed as the second most threatening disease, accounted for only 24 percent of losses from 1847–1852 in France.[24] However, this mortality rate gradually decreased until 1866 when, as Sharrer notes, the veterinary profession "coalesce[ed]" around the disease and divided into three camps: the "horse doctors" who continued "bleeding and purging, aimed at balancing the humors" and homeopathic veterinarians who followed "the law of similarities," and the "contagionists" who "isolated or destroyed sick animals and disinfected their surroundings, practices that germ theory absorbed and rationalized further."[25] This marked a significant evolution in veterinary practices, with horse doctors diverging from what became mainstream and contagionists following more effective practices comprising the immediate destruction of affected animals and creation of sanitary environments.[26]

Throughout the early nineteenth century, veterinarians developed measures to become more efficient at recognizing, diagnosing, and disposing of horses infected with glanders to limit its spread. The greatest challenge posed by glanders was that mortality rates increased dramatically when a large number of equines lived in close quarters over extended periods, such as during conflicts. While diagnosis was critical in limiting the spread of the disease, in the mid-nineteenth century, questions still existed about its cause, how long an infected animal or human could survive, and how long the disease could lay dormant. Nineteenth-century physicians knew little about this disease and were only able to identify it in a post-mortem exam. Significant advances followed Pasteur's germ theory of disease, which gained traction in the late nineteenth century and slowly replaced theories related to spontaneous generation in human medical and veterinary spheres. As

[24] Balfour, "Vital Statistics of Cavalry Horses," 257.
[25] Sharrer, "The Great Glanders Epizootic, 1861–1866," 95.
[26] Balfour, "Vital Statistics of Cavalry Horses," 254 and 268.

with other disease outbreaks among humans and animals, germ theory transformed strategies to limit the spread of contagions.[27]

As early as December 18, 1846, in France, a ministerial circular "ordered that all glandered or suspected horses were to be slaughtered unless cured at the end of six weeks." In 1847, the "Commission d' Hygiène Hippique" issued instructions to the army outlining that a special board tasked with deciphering if a disease was glanders should examine horses with a suspicious discharge.[28] However, the difficulty was that many cases of glanders were undetected; the disease was the second highest of equine disease for asymptomatic rates, behind "swamp fever" also known as "infectious anemia, spread by blood sucking flies," which protracted the disease and its resulting fatalities.[29] As soon as the board determined that the disease was glanders, the horse was immediately killed. If diagnosis was not made on the first visit, the board would make subsequent visits until it could determine the "nature of the disease."[30] In a report from 1880, Balfour found that implementing immediate destruction policies in the French army, where glanders was more prevalent, gave "valuable support" to the preventive practice since, statistically, immediate destruction had helped limit the spread of the incurable disease.[31] The amount of attention given to inspecting for this disease in the mid- to late nineteenth century is evidence of the disease's potential for devastation and the importance that medical officials placed on combatting this fatal zoonotic disease. However, further visits to monitor a horse also enhanced the potential for infecting humans who came into contact with the infected equine.

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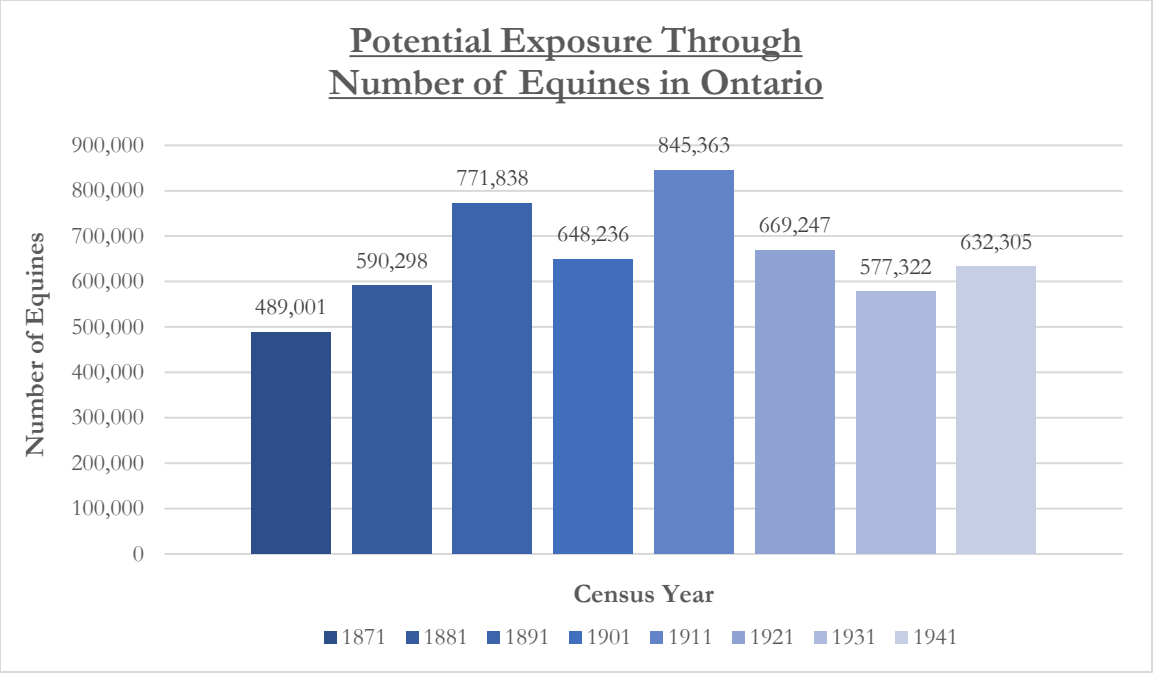
[27] As shown in Jacalyn Duffin's, *A History of Medicine: A Scandalously Short Introduction* (Toronto: University of Toronto Press, 2010), 81–82.
[28] Balfour, "Vital Statistics of Cavalry Horses," 251–74. 258.
[29] Sharrer, "The Great Glanders Epizootic, 1861–1866," 80.
[30] Balfour, "Vital Statistics of Cavalry Horses," 258.
[31] Balfour, "Vital Statistics of Cavalry Horses," 272 and 268.

Outbreaks could infect an entire herd, as well as neighbouring herds and the people working with and caring for the infected animals. As Table 4.1 shows, the large number of horses and their close interaction with humans in late nineteenth and early twentieth-century Ontario made combatting fatal zoonotic diseases that spread from equines to humans of paramount importance. Consequently, institutionally trained veterinarians and government officials adopted new regulations and advances in veterinary science and urged livestock owners to adopt these practices. Examining what these advances entailed and how veterinarians expected farmers to adjust their practices in accordance with new rules provides a more comprehensive picture of animal–human relationships and how these relationships evolved—an approach often overlooked by scholars in favour of studies on achievements in professional veterinary medicine. Threats of disease motivated stakeholders to collaborate in overcoming public health challenges that had the potential to devastate both animal and human populations, as well as challenge the nation's prosperous industries. However, in aggregate, this developing, reciprocal relationship between farmers and veterinarians took a non-linear path.

Table 4.1: Number of equines that were susceptible to contracting glanders in Ontario



Source: The number of equines in this chart includes horses over three years of age, colts and fillies, and mules, Department of Agriculture, "Census of Agriculture, 1871-1911 [Ontario] [Excel]," Borealis, 2023. https://doi.org/10.5683/SP3/2YVN82; *Census of Canada,* 1921, vol. 5—Agriculture, 709; 1931, vol. 8—Agriculture, 510; 1941, vol. 8—Agriculture, 954.

In 1876, *The Farmer's Advocate* printed an article from the *New York Tribune* where Professor Law outlines the importance of isolating horses from "a public thoroughfare, since a speck from [the horse's] nose in snorting or coughing may cost the life of a human being."[32] Law writes that "very rare[ly]" horses may appear to recover from "acute" or "chronic glanders"; however, these recoveries were unreliable because glanders would break out again following any "hard work," which often involved human proximity and thereby increased the chances of interspecies transmission. He argues that "over-confident owners" allowed horses to mingle with others during a "relapse," which, in some cases, led to the destruction of every horse on a farm. Because of the ability of glanders to infect humans, Law argues that "there is good ground for questioning the economy or morality of

[32] "Can Glanders be cured?" *The Farmer's Advocate* XI, no. 4 (April 1876): 73.

treating even chronic glanders." He describes different remedies which some claimed were successful, including "the arsenite of strychnia, in doses of five grains daily," "bisulphate of soda … added in drachm doses, twice daily," "the fumes of burning sulphur … inhaled at the same intervals, for half an hour or more at a time, care being taken not to have it so concentrated to cause irritation, coughing or sneezing," or "the enlargements under the jaw may be rubbed daily with iodine ointment to be stopped when the skin becomes very tender." Most importantly, the author emphasized the need for "a comfortable, dry box [stall] and perfectly pure air, with [a] sound and highly nourishing diet. In the summer, the patients d[id] better in open air, on rich grass. If kept in-doors, they should have regular exercise but no work … given in a private secluded place," before adding that "the need for care of bridles, buckets, sponges, litter, etc. is self-evident" with such a contagious and "loathsome, painful, and fatal disorder."[33] Although these instructions did little to either diagnose or confirm the cause of glanders, these treatments and preventive methods demonstrate the laborious efforts that farmers took to combat the spread of fatal diseases between animals and humans.

In his role as surgeon-general for the British army and fellow of the Royal College of Physicians of London, Balfour concluded in 1880 that it was "necessary … to note that glanders is considered to be so incurable, that with a view to prevent its spread by contagion, a horse [was] slaughtered as soon as the existence of the disease [was] fully recognised."[34] By the mid-nineteenth century, France, Britain, the United States, and Canada understood how glanders spread—each learning from the effectiveness of different strategies. Though the disease remained incurable, some officials were able to observe and identify extreme forms of its symptoms. Veterinarians also realized that symptoms could take over a month to manifest, which led to the need for public health

[33] "Can Glanders be cured?" *The Farmer's Advocate* XI, no. 4 (April 1876): 73.
[34] Balfour, "Vital Statistics of Cavalry Horses," 258.

networks to develop a means of testing an animal to ensure it did not infect humans or other animals while the disease lay dormant.[35]

The veterinary community in the Western world, particularly those who had been educated in Britain before migrating to North America (see Chapter Two), learned from strategies employed within this network and went on to implement and amend strategies that they believed would best serve their local communities. The Canadian and provincial governments informed farmers about new protocols and advances in veterinary science through popular and widely read newspapers, periodicals, and manuals. In a July 1884 article published in *The Globe*, the author advised the public about the risks associated with glanders and the dangers of its ability to rapidly spread among livestock and humans following the death of eight or ten horses infected with glanders in the previous six weeks in Toronto. This resulted in the Ontario legislature quickly passing an Act, which outlined:

> Every person in his possession or under his charge any animal which is or appears to be diseased, shall keep such animal separate from other animals not so diseased, and shall, with all practical speed, give notice to a veterinarian of the existence or supposed existence of the disease.[36]

This Act was quickly circulated in the *Globe* to advise horse owners of their legal responsibilities to limit the disease. Owners were required to call for a veterinarian "to make an immediate inspection." If a veterinarian diagnosed the animal with "glanders or farcy, the animal must be destroyed and burned or buried within twenty-four hours thereafter."[37] This widespread publication of the

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[35] "Periods of Incubation or Latency of Disease," *The Farmer's Advocate and Home Magazine* XXXVII, no. 548 (April 21, 1902): 282.
[36] "The Ontario Law About Glanders," *The Globe (1844–1936); Toronto, Ont.* July 23, 1884. Possibly written by *The Globe*'s founder, George Brown. J. M. S. Careless, "Brown, George," in *Dictionary of Canadian Biography*, vol. 10, University of Toronto/Université Laval, 1972. https://www.biographi.ca/en/bio/brown_george_10E.html.
[37] "The Ontario Law About Glanders," *The Globe, Toronto, Ont.* July 23, 1884.

necessary precautions and measures taken to limit the spread of glanders illustrates that both law enforcement and the veterinary community understood the dire need to educate those who relied on horse-powered labour about the nature and deadly impact of the disease on both animals and humans. In Toronto in 1884, people could be issued a "penalty for neglect to comply" with what the author declared a "very necessary law."[38] This penalty subjected "any and every case" to "$100, and a further sum of $50 for every twelve hours after notice is given until the animal is buried or burned."[39] This penalty threatened a further financial burden on horse owners, many of whom had in the past considered financial losses from an equine's death in their decision to sell the horse at market. However, as we see in Chapter Five, challenges to professional veterinary authority make it clear that punitive policies against farmers or veterinarians practising without a licence were not always effective.

Farmers were not only receiving new information on animal health practices; they digested and questioned it. When scientists started to focus on hygiene and sanitary measures, *The Farmer's Advocate and Home Magazine* published a question-and-answer section; in one edition, a reader supposedly asked how to disinfect a log stable and prevent other horses from becoming infected.[40] In answer, the author highlights the longevity of the glanders contagion and noted the need to "thoroughly cleanse and disinfect" the stables and all other places or materials where the glandered horse had contacted. The author recommended burning the "mangers, feed-boxes, pails, loose boards, bedding … and the halter used" and coating each surface with "one part carbolic acid to thirty parts hot water ... several times" and using a solution of "ferrous sulphate (copperas), one pound to a pail of boiling water" to treat a dirt or gravel floor, before "whitewashing the whole

[38] "The Ontario Law About Glanders," *The Globe, Toronto, Ont.* July 23, 1884.
[39] "The Ontario Law About Glanders," *The Globe, Toronto, Ont.* July 23, 1884.
[40] "Disinfecting Glandered Stable," *The Farmer's Advocate and Home Magazine* XXXVII, no. 588 (September 15, 1902): 685. The final chapter of this dissertation examines how OVC implemented curriculum changes according to advances in sanitary science.

interior of the stable, adding a small quantity of carbolic acid to the wash" and destroying or disinfecting all manure and sweepings using a "solution of ferrous sulphate or chloride of lime." To avoid reactivating the contagions, experts encouraged farmers to disinfect animal environments by covering the entire surface of stables and dirt floors so that the contagion was unable to dry and become dormant "for months," infecting a host after it is "rendered fluid by water."[41] Without thoroughly coating or destroying the infected surfaces, the expert author argues that the glanders contagion could infect equines new to the environment, remaining contagious "for months" after an infected equine was no longer present.[42] Experts' call to thoroughly disinfect shared environments was a step toward understanding how the contagion spread and implementing research-based preventive measures to limit the spread of this incurable disease, suggesting that disinfection was effective in preventing disease transmission.

However, in 1895, John McFadyean, a professor of veterinary science at the Royal Veterinary College, argued that "it seemed as if glanders could not be successfully dealt with by any other method than wholesale slaughter of infected animals, with compensation from imperial funds. But the discovery of mallein, a testing agent developed from *Burkholderia mallei* cultures, in Europe had given an entirely new complexion to the question."[43] As a diagnostic tool, McFadyean said that mallein was "marvellously accurate."[44] Within twenty-four hours, veterinarians could now determine

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41 "Disinfecting Glandered Stable," *The Farmer's Advocate and Home Magazine*, 685.
42 "Disinfecting Glandered Stable," *The Farmer's Advocate and Home Magazine*, 685.
43 William Hunting was an influential clinician who made glanders his life's work as an examiner in veterinary science for the University of London and as Chief Veterinary Inspector to the London County Council. He was also a well-known expert on outbreaks of glanders in Canadian Parliamentary papers. Hunting noted that the mallein test was first discovered in 1891 by Kalning and Helman, Russian veterinarians. Hunting, *Glanders*, 13. "Sessional Papers: Third Session of the Eighth Parliament of the Dominion of Canada, 1898," 6, no. 8 (Ottawa: S. E. Dawson, 1899): 82–83. However, according to OVC Professor J. B. Derbyshire, Loeffler and Schutz in Germany and microbiologists Bouchard, Charrin, and Captain in France, in 1882, and in 1890, Helman in St. Petersburg, Kalning in Dorpat, and Pearson in Philadelphia isolated *Pseudomonas mallei*, the bacteria responsible for glanders and independently prepared the mallein test. J. B. Derbyshire, "The Eradication of Glanders in Canada," 722.
John McFadyean, "Royal Veterinary College, London. The Suppression of The Contagious Diseases of Animals," *The British Medical Journal* 2, no. 1762 (1894): 758.
44 McFadyean, "Royal Veterinary College, London. The Suppression of The Contagious Diseases of Animals," 758.

precisely which horses were infected and take measures to quarantine infected animals, whether or not the animal was showing symptoms. This breakthrough provided veterinarians with scientific evidence and increased authority to isolate and kill infected equines, thereby limiting the spread of a fatal disease, regardless of any financial impact that owners may have tried to counteract in the past.

The need to create a diagnostic agent to eradicate the spread of glanders was of global importance, with at least seven European scientists dying as a result of accidental infection from 1891–1892 alone.[45] Creating the mallein test enabled veterinarians to identify and isolate individual cases and limit the spread of glanders outbreaks. Investing in laboratories to produce and distribute mallein, as well as the instruments that could help administer and diagnose cases of glanders, combined with efforts to centralize reporting, led to the eradication of glanders across Canada in 1938. The mallein test still requires forty-eight hours, an isolated environment, and experienced laboratory personnel to administer the test. Even today, scientists are still working on alternatives that work faster to identify glanders in regions where there are wild horses and in communities where there are few people trained in the necessary laboratory procedures.[46] Nevertheless, at the turn of the twentieth century, the mallein test proved revolutionary in preventing further outbreaks of glanders and limiting the devastation that one outbreak could cause.

William Hunting, a renowned authority on glanders from Britain, provided meticulous directions for the production, use, and resulting symptoms when using mallein as a diagnostic agent.[47] Mallein was injected using an intradermal (hypodermic) syringe, similar to the one used for

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[45] Hunting, *Glander*, 13.

[46] Amin Karimi and Nader Mosavari, "Development of Rose Bengal Test Against Mallein Test for Rapid Diagnosis of Equine Glanders," *Tropical Animal Health and Production* 51, no. 7 (2019): 1969–1974. Eradicated in North America, Australia, Japan, and Europe, glanders is still an endemic concern in parts of the Middle East, Asia, Africa, and South America. Canadian Food Inspection Agency, "Equine Glanders Fact Sheet," Government of Canada, January 10, 2018, https://inspection.canada.ca/animal-health/terrestrial-animals/diseases/immediately-notifiable/fact-sheet/eng/1515109194349/1515109530734; Amy Young, "Glanders," U. C. Davis – Veterinary Medicine Centre for Equine Health, February 18, 2020, https://ceh.vetmed.ucdavis.edu/health-topics/glanders.

[47] Hunting trained at William William's New Veterinary School in Edinburgh, Scotland. See Chapter Two for more information on the connection between British and Canadian veterinary training.

tuberculin testing in cattle suspected of bovine tuberculosis. The complement fixation method (a test for specific antibodies) required the injection to be administered into the eyelid. Later, the mallein eye disc method, also known as the eye drop method, made application easier in the environments of the First World War. Following the injection, the attendant would monitor the horse for any symptoms of glanders.[48] Many publications outline different intervals for recording the temperature and size of local swelling after administering mallein, preferably on the neck of horses. Hunting created a chart for recognizing a typical positive reaction (Figure 4.1). However, he indicated that individual horses may react slightly differently, and a "double reaction [was] not always given," in which case re-testing was required.[49] According to Hunting, at the same time, no one claimed that mallein was "infallible"; it was an "aid far more reliable than any other, more trustworthy than any expert opinion, and indicative when no trace or sign of disease can be detected by the most careful clinical examination."[50] Many publications outline different intervals for recording the temperature and size of local swelling after administering mallein, preferably on the neck of horses.

Figure 4.1: Typical, positive reactions described by Hunting in *Glanders: A Clinical Treatise*

	Temperature.		*Diameter of Local Swelling.*
Temperature at	8 p.m., time of injection	100	
„	8 a.m., 12 hours after	104	3 inches
„	12 m., 16 hours after	105	4 „
„	4 p.m., 20 hours after	105	5 „
„	8 p.m., 24 hours after	104	6 „

Source: Hunting, *Glanders*, 62.

[48] Lisa Cox, "Finding Animals in History," in *The Historical Animal*, ed. Susan Nance (New York: Syracuse University Press, 2015), 111; L. J. Blenkinsop and J. W. Rainey, *History of the Great War Based on Official Documents: Veterinary Services* (London: His Majesty's Stationary Office, 1925), 497.
[49] Hunting, *Glanders*, 63.
[50] Hunting, *Glander*, 65.

Veterinarians around the world recognized Hunting as an expert authority who had conducted extensive research on glanders. However, he was careful not to overstep the expertise of medical practitioners. He recognized the fatal effect and similar symptoms that the zoonotic disease could have on humans and the importance of collaboration. Hunting cited the foundational work of Dr. G. D. Robins, a Canadian clinical assistant in neurology at the Royal Victoria Hospital in Montréal. When referencing Robins' investigation of 156 global cases and his appendix of equine and human cases presented in Canada, Hunting exhibited the importance of combining both knowledge and practical efforts to overcome a public health challenge. The connection between British and Canadian human and veterinary medical practitioners helped to develop the precautionary measures needed to limit the spread of the zoonotic disease in shared environments.

Robins "congratulated" Dr. J. G. Rutherford, Canadian Veterinary Director-General and Live Stock Commissioner, for leading efforts to find a "satisfactory solution" to combat the spread of glanders.[51] Following the early adoption of protocols that allowed screening for glanders, Rutherford outlined in a "Special Report on Glanders" on behalf of the Health of Animals Branch for the federal Department of Agriculture in September 1906 that "it [was] gratifying to note that the British authorities [were] being urged to introduce the identical policy which we have already adopted in Canada." Rutherford noted that this was significant because it recognized Canada's accomplishments in a place where "distances are magnified" and the population is "sparse" compared to a "small country like Great Britain, where police and inspection work has been reduced to a science."[52] In a review of the British government's *Report of the Board of Agriculture and Fisheries for 1904,* an article in *The Lancet* on July 15, 1905, admits that instances of glanders in equines were increasing. In 1894, 502 outbreaks were recorded in Britain. However, by 1904, there were 1,539

[51] G. D. Robins, *A Study of Chronic Glanders in Man* (Montréal: Guertin Printing Company, 1906): 89.
[52] J. G. Rutherford, "Special Report on Glanders," Health of Animals Branch, Department of Agriculture Canada, September 1906, 10.

outbreaks, with 2,658 horses killed to prevent the spread of the disease. As a result, the Board recommended increased authority for "veterinary inspectors to test the in-contact horses with mallein" because doing so would allow an "infallible diagnosis" within twenty-four to forty-eight hours. The associated costs of widely administering mallein as a diagnostic agent were minimal compared to the cost of destroying a large equine population infected by an untethered outbreak, especially when the fatal disease also caused the deaths of many humans every year.[53] Rutherford continued by advocating for the testing of imported horses, especially those from the "Western United States," but notes that, at the time, it was unnecessary to test "human immigrants [who may have contracted glanders] from that country."[54]

In the late nineteenth century, glanders was seen as a "black box," which meant that, much like in the United States, Canadian farmers had to accept their losses with a sense of fatalism, similar to how society viewed childhood mortality at that time.[55] In 1905, there was still some confusion regarding the treatment of glandered horses and possible compensation. A reader wrote to *The Farmer's Advocate and Home Magazine* asking when the law on government compensation for glandered horses had taken effect and if there was compensation for their veterinary charges. The reader explained that they had "quarantine[d]" their horses over the winter and that the horses "show clinical symptoms …, but [they continued] working them, and [the horses were] in fairly good condition." The editors answered in disbelief:

> We cannot understand how you are allowed to keep glandered horses showing clinical symptoms. They should be slaughtered at once, and if done by the Dominion Inspector, D. McGilvray, you will get compensation. No local veterinarian has authority to quarantine you. Order-in-council authorizing compensation for clinical cases was

[53] Review of *Report of the Board of Agriculture and Fisheries for 1904* (London: Darling and Son. Price 11d) in "Reviews and Notices of Books," *The Lancet* (originally published as Volume 2, Issue 4272) 166, no. 4272 (July 15, 1905): 165. https://doi.org/10.1016/S0140-6736(01)13871-7.
[54] Rutherford, "Special Report on Glanders," 10.
[55] Sharrer, "The Great Glanders Epizootic, 1861–1866," 94.

> passed at Ottawa March 26th [1905]. Grade horses cannot be compensated for higher than two-thirds on a valuation of $150. You are running great risks of contracting this disease by keeping these horses. No local veterinarian can collect for treating glanders; he is breaking the law.[56]

This situation was not uncommon. It shows multiple misunderstandings in communicating scientific advancements and different challenges to combatting the disease. First, the horse owners' negligence appears rooted in changing laws and recent advancements in veterinary science. The person who inquired likely thought he was taking precautions in the hopes of curing the horses or receiving compensation for the financial loss and hardship endured due to the spread of glanders. Financial precarity influenced the decisions of livestock owners, especially those who were not wealthy, pure-bred livestock breeders, and the animal–human relationship between livestock and their owners. Since farmers needed to use their animals as much as possible, even when those animals were sick, the zoonotic disease posed risks to the livestock owner himself. Also, confusion about who had the authority to administer such compensation is apparent. A lack of access to veterinarians who could recognize an outbreak, administer testing, and authorize financial compensation (a means to stop the spread of glanders in markets where people sought to sell horses before realizing the loss themselves) posed a massive problem for those trying to eradicate glanders. Although the government was taking steps to eliminate the disease, it is clear that these measures were not immediately or universally accepted or applied.

In addition to describing the symptoms and methods for disinfection upon the destruction of an infected horse (discussed in the final section of this chapter), *The Farmer's Advocate and Home Magazine*'s authors outlined possible causes. They stated that range horses were a notable source for disseminating the disease because although the disease did not become apparent in the conditions of

[56] "Glanders and Compensation," *The Farmer's Advocate and Home Magazine* XL, no. 660 (May 17,1905): 741.

free-range environments, it "soon developed when the infected animals [were] broken, stabled, and put to work."[57] Inspection at borders took place; however, without the use of mallein on the necessary scale. Glanders travelled through confined spaces with "numerous itinerant bands of broncos imported for the purpose of being peddled to farmers," many of which were "sold by sacrifice" and "brought into Canada either by persons ignorant as to their true condition, or unscrupulous enough to run the risk of having them pass inspection at the border before the disease has developed sufficiently to admit its existence being detected by ordinary [or observable] methods."[58]

Canada "pioneered systematic [diagnostic] testing" for glanders following the strategy adopted in 1902 that called for immediate destruction upon detection.[59] Following this campaign, in 1907, *The Farmer's Advocate and Home Magazine* reported that Ontarians had made considerable strides in the previous two or three years to combat the disease by relying on knowledge of veterinary science in conjunction with implementing policy controls. This article reported that glanders was "rife" in Manitoba until the province adopted federal government policies. Glanders was "also very prevalent" in Saskatchewan and Alberta. In British Columbia, the author noted that glanders had "caused no end of trouble" because many people were unaware that horses "may be infected with the serious disease, yet fail to show outward symptoms. Fortunately, the B.C. people have not yet had a case of glanders in the human family, or they would be inclined to consider the disease as one not to be trifled with for the matter of a few dollars."[60] Though many professional veterinarians were trained to detect outbreaks of glanders by observing symptoms and administer the mallein test

[57] "Glanders and Its Detection," *The Farmer's Advocate and Home Magazine,* 1016.
[58] "Glanders and Its Detection," *The Farmer's Advocate and Home Magazine,* 1016.
[59] Olsen, "The Urban Horse and the Making of Montreal, 1840–1914," in *Animal Metropolis*, 80.
[60] "The Glanders Question Worthy of Careful Thought," *The Farmer's Advocate and Home Magazine* XLII, no. 763 (May 8, 1907): 685.

(dependent on a veterinarian's access to its distribution), not all farmers were aware of these developments.

Throughout the First World War, the Canadian Army Veterinary Corps' (CAVC) experience identifying glanders and implementing measures to prevent its spread was crucial to maintaining the war effort. Glanders was rarely reported on the Front, despite the mass transportation of horses in close quarters over long distances and contagions deliberately produced and spread as a biological weapon. Veterinarians played an integral role throughout the war, distributing knowledge and regulatory measures that limited the spread of the fatal zoonotic disease and its potential to devastate the Allied war effort.

Over 500,000 horses were casualties by the end of the war.[61] Consequently, the Allied forces relied on Allied nations and private donations to supply horses for the war effort; Canada sent 130,000 horses overseas. Britain's military horse population was 19,000 at the beginning of the war. However, the military purchased 468,000 horses in the United Kingdom and 688,000 from North America to maintain a supply of remounts.[62] To meet this demand, an extensive transport system developed. Horses were imported from the United States to Canada before boarding ships for transport across the Atlantic. By 1914, veterinarians and government officials recognized the potential devastation that glanders could cause to horses confined in close quarters for most of this journey. In response, they implemented preventive measures to ensure that cases did not reach the front and inflict further devastation. Horses were quarantined and tested for glanders at each border crossing before journeying to Britain, after arriving in Britain, and before being transported to the

[61] Andrew McEwen, "He Took Care of Me: The Human-Animal Bond in World War One," in *The Historical Animal*, ed. Susan Nance (New York: Syracuse University Press, 2015), 272; Blenkinsop and Rainey, *History of the Great War Based on Official Documents: Veterinary Services*, 508 and 509.
[62] Britain sought to maintain the strength of remounts to 6 percent of horses serving in the field. Cecil French, *A History of the Canadian Army Veterinary Corps in the Great World War, 1914–1919*, eds. C. A. V. Barker and Ian Barker (Guelph: Crest Books, 1999), 134.

Front. CAVC inspectors were also tasked with surveying working horses for glanderous symptoms and educating those working with horses to recognize the early symptoms. Officers' exams also included questions related to detecting symptoms of glanders, demonstrating the importance that officials placed on early detection and the potential devastation that an outbreak of glanders could have on the overall war effort.

During the First World War, veterinarians were forced to improvise and practise reactive medicine to deal with the conditions of warfare. However, a supply of the mallein test was crucial in their ability to combat outbreaks of glanders effectively. This test—a significant medical breakthrough—was instrumental in their work. A letter from an Officer in Command states that he was "unable to furnish" all requested supplies.[63] Instead, he suggested that the officer should communicate with the officer of the No. 1 Base Depot Veterinary Store for the British Expeditionary Forces, "both of whom have supplied medicines to this division."[64] However, he advised that these drugs were "no longer despatched from the Base via the Mobile Vet Section, but are now despatched direct to the Vety. Officer concerned via the Military Forwarding Officer."[65] This adaptation allowed CAVC members serving on the front lines to obtain the necessary supplies. Blenkinsop and Rainey noted that this change occurred in 1915 and was necessary to allow veterinary officers the means to diagnose horses suffering sooner and efficiently combat outbreaks of glanders.[66]

The Canadian Army Veterinary Corps (CAVC) first administered the intradermal palpebral mallein test. In this less costly and less bulky method, veterinarians would use a hypodermic syringe to inject two drops of mallein into the horse's eyelid before the creation of the complement-fixation,

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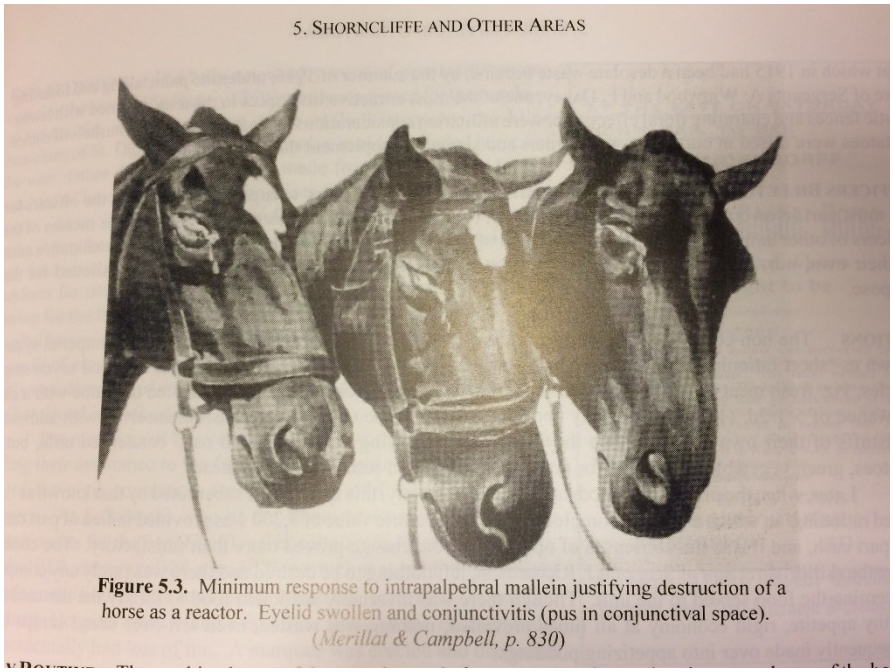
[63] Captain M. G. O'Gogarty, "Request sent to D.V.S.R & Repots," H-132-45, "Horses General Correspondence," RG9III B1 Vol. 3377, Canadian Army Veterinary Corps Records, Library Archives Canada, Ottawa, Ontario.
[64] O'Gogarty, "Request sent to D.V.S.R & Repots."
[65] O'Gogarty, "Request sent to D.V.S.R & Repots."
[66] Blenkinsop and Rainey, *History of the Great War Based on Official Documents*, 521.

which relied on a trained bacteriologist and a "properly equipped laboratory."[67] Eventually, the mallein eye-disc test, produced using the complement fixation method, proved to be more efficient.[68] Blenkinsop and Rainey noted that the mallein eye disc was vital in Canada because veterinarians could easily administer it during the winter months.[69] A glanderous horse would show signs of swelling in the eyelid, an inflamed conjunctival sac, and accumulation of mucus within twenty-four hours, lasting several days (Figure 4.2). A horse was isolated and re-tested if results were inconclusive.[70] Laboratories produced tests to meet demand (on a larger scale throughout the First World War) and administered as horses underwent import and export quarantine protocols or upon susception of infection.[71]

[67] The complement-fixation method is a serological test (blood test to detect antibodies) still used as the standard today. World Organization for Animal Health, "Glanders and Melioidosis," Chapter 3.5.11., *OIE Terrestrial Manual* (originally published in 1991, last updated, 2018): 1352. However, this method requires hypodermic syringes, which were difficult to source in the numbers required throughout the First World War. Therefore, the eye disc became popular. "Record of Supplies Requested," RG 9 III C 11, Vol. 4585, Folder 11, Sources Relating to Units of the Canadian Expeditionary Force: Canadian Army Veterinary Corps Records, Library and Archives Canada, Ottawa, Ontario; Blenkinsop and Rainey, *History of the Great War Based on Official Documents*, 521.
[68] Blenkinsop and Rainey, *History of the Great War Based on Official Documents*, 520.
[69] Blenkinsop and Rainey, *History of the Great War Based on Official Documents*, 521.
[70] During the First World War, officers also documented each time they dispensed mallein to track possible outbreaks on a large scale. Army Veterinary School, Aldershot, "Directions for using the Special Mallein for the Intradermal Palpebral Test," French Papers, as found in Barker and Barker, eds., *A History of the Canadian Army Veterinary Corps in the Great World War 1914–1919 by Cecil French*, 14.
[71] Veterinarians preferred the subcutaneous method throughout the eradication program until the First World War. Following the war, the intradermal palpebral and complement-fixation eye-disc tests were produced. Derbyshire, "The Eradication of Glanders in Canada," 725.

Figure 4.2: Visual reactions of a horse infected with glanders following the intrapalpebral mallein test



Source: Barker and Barker, eds. *A History of the Canadian Army Veterinary Corps in the Great World War 1914–1919 by Cecil French*, 15.

The British Expeditionary Forces stationed one captain, one civilian laboratory attendant, and two female packers to produce mallein in a laboratory at the British veterinary hospital located at Aldershot.[72] This group was able to produce 50,000 doses of mallein a month "at a cost of less than two pence a dose."[73] The production of the mallein eye-disc test allowed Canadian veterinarians to immediately observe symptoms instead of waiting for laboratory results using increased time and resources.[74] This reorganization increased the reliability of the mallein test and increased the CAVC's ability to quickly identify, isolate, and destroy any infected horses.

Throughout the war, officials communicated to those on the Front and in support networks about the danger that glanders, both naturally and as sabotage (discussed later in this chapter), posed

[72] Chapter Five discusses women's early role in veterinary medicine—for example, their early supportive work as laboratory technicians and administrative assistants.
[73] Blenkinsop and Rainey, *History of the Great War Based on Official Documents*, 521.
[74] Blenkinsop and Rainey, *History of the Great War Based on Official Documents*, 497.

to humans and equines. In doing so, they quickly stopped the spread of the disease several times. After the war, those with knowledge of the disease brought this knowledge with them when they returned to Canada. Thus, farmers, like other Canadians, became more aware of how a coordinated effort could limit the spread of zoonotic diseases and recognized how advances in veterinary science helped to maintain public health.[75]

In 1919, prompted by the success in fighting the disease during the war, Canada increased preventive regulations and quarantine protocols, calling for inspectors and veterinarians to administer the mallein test for all equines entering or passing through Canadian borders.[76] At the time, C. D. McGilvray, OVC principal, also recognized the need to address "Incidents of Glanders in Man" at the Academy of Medicine in Toronto to ensure that physicians, in addition to veterinarians, were well versed on the life-threatening contagious disease and the preventive protocols needed to limit the spread of this fatal, incurable illness.[77]

By 1925, the federal Department of Agriculture placed a newspaper advertisement outlining the success of its six-point plan to help farmers and Canada's "greatest basic industry." The department claimed that glanders, along with cattle mange and hog cholera, were effectively controlled by inspections.[78] Throughout the interwar period, it is clear that preventing the spread of glanders remained a priority for the federal government. Many Canadian sources disseminated information cautioning about the human death tolls that resulted from outbreaks throughout eastern Europe and Russia, many of which transferred from horses to humans and the resulting human

[75] People had also lived through past outbreaks of disease. Most significantly, the Spanish influenza of 1918, may have provided a model for how to react (or not).
[76] *Canadian Customs Tariff and Excise Duties, corrected to July 1, 1913*, Compiled by Michael P. McGoldrick, His Majesty's Customs, Montréal (Montréal: Morton, Phillips & Co. Publishers), Canada. Office of the Minister of Agriculture, 1919, HJ6751 A7 M24 1913, Library Archives Canada, Ottawa, Ontario, 79242, 25 and 27.
[77] C. D. McGilvray, "Report of the Ontario Veterinary College, 1919," CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 6.
[78] "Canada Helps Her Farmers," *The Free Press*, London, Ontario (Saturday, October 10, 1925): 9.

death toll.[79] Canadian newspapers also documented organizational efforts like those by the Red Cross to limit the spread and the Russian government's procedure wherein "if a man develop[ed] "sap" [the Russian term for glanders] he [was] taken out and shot, [to limit the spread] for it is very infectious"—a protocol similar to the one used to limit the spread of glanders among horses in Canada.[80]

Similar protocols persisted at veterinary institutions through the 1930s. Professors in the department of veterinary science at the University of Toronto examined fourth-year students on the "nature, cause, and symptoms of glanders" in 1932.[81] In 1937, a third-year student at OVC wrote "B. Mallei" (the short-form of the Latin name, *burkholderia mallei*, for the glanders contagion) in a quick note on the exam sheet when asked to define glanders for their contagious diseases exam.[82] The same cohort, in their fourth-year exam on infectious diseases, was asked a year later to distinguish between which animals were "susceptible" to glanders, in addition to other diseases including anthrax and black leg (a disease often confused with anthrax).[83] Continuing to examine future veterinarians on zoonotic diseases like glanders in the final years before it was eradicated in Canada

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[79] For examples of articles outlining human deaths related to glanders in Moscow, see "Thousands are Dying Daily in Great Russian Centres," *The Toronto World* xxxix, no. 13,995 (March 7, 1919): Front Page. For deaths in Siberia, see "Canadian Tells of Red Cross Relief in Siberia," *The London Evening Free Press*, London, Ontario (March 3, 1921): Front Page.

[80] "Finds 2,000 with Hands Frozen Off: Canadian Tells of Red Cross Relief in Siberia," *The London Evening Free Press*, London, Ontario (March 3, 1921): Front Page.

[81] "University of Toronto – Department of Veterinary Science, Annual Examinations, 1932, Fourth Year, Infectious and Contagious Diseases, Examiner – C. D. McGilvray," in "Class notes, academic letters, examinations, pamphlets, circulars, financial records and other miscellaneous correspondence and business documents of B. D. Young was an graduate of OVC in 1932, and a veterinarian and farmer from Campbellville, Ontario," Benjamin D. Young Transcripts, April 30, 1929, May 2, 1930, May 2, 1931, CA F168-7-10, RE1 OVC A0108, Box 3, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.

[82] "Ontario Veterinary College, Annual Examinations, 1937, Third Year, Contagious Diseases, Examiner – C. D. McGilvray," in "Collection of correspondence, lecture notes, exams, publications and other memorabilia relating to Andrew Grant Misener, 1930–1939," CA F1-43-50, RE1 OAC A0667, Box 3, Ontario Agricultural College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.

[83] "Ontario Veterinary College, Annual Examinations, 1938, Fourth Year, Infectious Diseases of Animals, Examiner – C. D. McGilvray," in "Collection of correspondence, lecture notes, exams, publications and other memorabilia relating to Andrew Grant Misener, 1930–1939."

illustrates the value that the government and veterinary officials placed on preventive measures like containing and eliminating outbreaks.

By the late nineteenth century, many in Europe knew that equines could transmit the glanders contagion to humans.[84] Outbreaks were well documented in Britain, France, and North America, with a notable rise in infections during significant conflicts like the American Civil War and South African War. Health officials worldwide were concerned about the effects of unchecked glanders long before the Government of Canada established universal policies and testing measures in the early twentieth century.[85] The increased transportation of horses throughout the British Empire and later, after 1926, the British Commonwealth of Nations, increased the potential for significant devastation. By investing in a diagnostic test (first developed in Europe)—an injected serum or eye drop that produced symptoms in infected equines—the federal government was able to implement destruction protocols more quickly, limiting the time required for quarantine and other import/export restrictions.[86] This early success in Canada provided a foundation for policies in

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[84] Bruce Vivash Jones, "Global veterinary medicine timeline," Veterinary History Society & Royal College of Veterinary Science (RCVS), RCVS Knowledge, July 2010, https://knowledge.rcvs.org.uk/heritage-and-history/history-of-the-veterinary-profession/global-veterinary-medicine-timeline/; Derbyshire, "The Eradication of Glanders in Canada," 722; Wilkinson, *Animals & Disease*, 116.

[85] "A serious outbreak of the disease in the Ottawa district in 1902 and a number of minor outbreaks elsewhere in Ontario, as well as in Quebec, British Columbia, and Yukon, together with the continuing high incidence of glanders in Manitoba and the Northwest Territories, justified the actions that were taken. In 1903, the *Animal Contagious Diseases Act* was amended to authorize the destruction of horses affected with glanders, and regulations were established in 1904 and 1905 by Order in Council under the *Act for the Control and Eradication of the Disease.* Between 1902 and 1904, clinical cases were slaughtered without compensation, while horses that reacted to mallein were quarantined and re-tested, and those that failed to react to subsequent tests were released from quarantine. However, by 1904, it was apparent that these ceased reactors remained capable of transmitting the disease to other horses, and the policy was changed to require all reactors to be slaughtered and their owners compensated. Further changes in March of the following year included compensation for animals that showed clinical signs, as well as bringing Manitoba into the federal control program, so that, by 1905, the Health of Animals Branch was responsible for the control of glanders throughout Canada." J. G. Rutherford, Health of Animals. In: Report of the Minister of Agriculture for the Dominion of Canada for the Year ended October 31, 1903, (Ottawa: Department of Agriculture, 1904): 77–78, Anonymous, History of Health of Animals Division, Department of Agriculture 1790–1960, Archival Collections, University of Guelph, XA1 MS A061, and J. G. Rutherford, Report of the Veterinary Director General and Livestock Commissioner for the Year Ending March 31, 1911 (Ottawa: Department of Agriculture, 1911): 13–28 in Derbyshire, "The Eradication of Glanders in Canada," 724.

[86] The Canadian government first purchased the mallein test from the Pasteur Institute's Chicago office. By 1903, the Animal Pathology Division of the Health of Animals Branch of the Department of Agriculture had prepared 183 tests at the Biological Laboratory in Ottawa. By 1906, all 14,303 mallein tests used in Canada were produced in Ottawa and distributed with instructions for conducting the test subcutaneously. From 1924 to 1925, of the 20,682 tests produced, 12,022 were subcutaneous, 3,360 were intradermal, and 5,300 were ophthalmic. The production of mallein in Canada

Britain. Eradicating the disease, however, would take time in Canada. As veterinarian J. B. Derbyshire argues, glanders was not eradicated in Britain until 1928, in the United States until 1934, and in Canada until 1938, thirty-four years after officials launched the campaign to eliminate the disease.[87] Though Britain adopted Canadian policies, it managed to eradicate the disease ten years earlier than Canada due to the expanse of Canadian environments and settlement areas, and the presence of wild horses crossing the border between Western Canada and the United States.

As a pioneer, Canada played a significant role in the global fight against glanders and was the first to implement regulations to combat its spread. The diagnostic services for glanders, and other infectious zoonotic diseases, accelerated the professionalization of veterinary medicine. Based on advances in veterinary science, new regulations and public health protocols led professional veterinarians and state officials to work with farmers, which in turn helped professional veterinarians gain authority.

Combatting Anthrax: A Prolonged Environmental Threat to Humans and Animals

While Hunting recommended the immediate quarantine of all suspicious cases of glanders, administering the mallein test, and killing all diseased horses before the "disinfection of the premises and the deep burial of the carcasses," livestock infected with anthrax were not so easily disposed

peaked between April 1910 and March 1911, with 50,112 doses produced, and between April 1934 and March 1935, when 90,765 doses were distributed following an outbreak in Quebec. Though the number of doses produced exceeded the number of tests administered. C. W. Sayers, "Early history of the Animal Pathology Division of Agriculture Canada," *Canadian Veterinary Journal* 24 (1983): 262–267; C. H. Higgins, "Report of the pathologist," in *Report of the Minister of Agriculture for the Dominion of Canada for the Year Ending October 31, 1903* (Ottawa: Department of Agriculture, 1904), 97; C. H. Higgins, "Report of the pathologist," in *Report of the Veterinary Director General and Livestock Commissioner for the Two Years Ending March 31, 1908* (Ottawa: Department of Agriculture, 1909), 62–63; E. A. Watson, "Pathological Division," in *Report of the Veterinary Director General for the Year Ending March 31, 1925* (Ottawa: Department of Agriculture, 1925), 16–21; C. H. Higgins, "Report of the pathologist," in *Report of the Veterinary Director General and Livestock Commissioner for the Year Ending March 31, 1911* (Ottawa: Department of Agriculture, 1911), 124–125; E. A. Watson, "Pathological Division," in *Report of the Veterinary Director General for the Year Ending March 31, 1935* (Ottawa: Department of Agriculture, 1935) 36, in Derbyshire, "The Eradication of Glanders in Canada," 725.

[87] Derbyshire, "The Eradication of Glanders in Canada," 722.

of.[88] Officials implemented similar preventive measures to combat the spread of anthrax, for example, by burning carcasses and all materials used by infected animals to stop the disease from spreading to other animals, humans, or environments. However, the anthrax contagion could remain dormant in soil matter for decades, infecting cattle grazing in a contaminated environment years later.[89] Once veterinary scientists recognized the long-term implications of cattle grazing on previously infected environments or distributing contaminated meat or wool from infected sheep, veterinary health officials implemented regulations to control the use of exposed land and animal by-products. They disseminated knowledge of how to identify and eradicate outbreaks of the contagious zoonotic disease quickly.

Both anthrax and glanders, with their potential to disrupt and devastate, spurred the call for action among veterinarians to understand and regulate outbreaks of disease that "threatened economic growth."[90] In 1905, a Scottish veterinarian who recognized the urgency wrote in *The Farmer's Advocate and Home Magazine* that the two diseases causing "disquietude" were anthrax and glanders.[91] Anthrax, a suddenly fatal and highly contagious disease, could infect all "warm-blooded animals, including humans," but most often cattle, sheep, and less frequently horses.[92]

The sudden death caused by anthrax meant that it remained a source of confusion for many. In 1915, some readers of *The Farmer's Advocate and Home Magazine* wrote to the "Questions and Answers" column for help with diagnosing cattle fatalities. In many cases, the responding veterinarian noted it was difficult to be sure that the cause was anthrax—their "sudden deaths

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[88] "Sessional Papers: Third Session of the Eighth Parliament of the Dominion of Canada, 1898," 83.
[89] Joanna Dean's provides a complementary argument on lockjaw or tetanus (*Clostridium tentani*) spores "lurk[ing] in urban soil for decades." Her analysis of horses carrying and disseminating the spores in urban environments and the infection of humans illustrates the balanced interdependence between human, animal, and environmental health. Joanna Dean, "Species at Risk: Tetani, the Horse, and the Human," in *Animal Metropolis*, 155–156.
[90] Martine Barwegen, "Chapter 5: For Better or Worse? The Impact of Veterinarian Service on the Development of Agricultural Society in Java (Indonesia) in the Nineteenth Century," in Brown and Gilfoyle, *Healing the Herds*, 96.
[91] "Our Scottish Letter," *The Farmer's Advocate and Home Magazine* XL, no. 667 (July 5, 1905): 996.
[92] William G. Clarence Smith, "Disease of Equids in Southeast Asia, c. 1800–1945: Apocalypse or Progress?" in Brown and Gilfoyle, *Healing the Herds*, 134.

indicate[d] anthrax, but the post-mortems described [did] not." As a result, on behalf of *The Farmer's Advocate and Home Magazine*, the veterinarian claimed that the reader would be "wise to have a veterinarian hold a post-mortem and investigate the cause if [they had] further trouble."[93] Since many were unaware of how to contain the spread or protect themselves from the diseases, the author advised farmers to call on a veterinarian to conduct a post-mortem because they had received training on the precautions and protective measures necessary to ensure that the disease did not spread to nearby animals, humans, and environments.

In contrast, glanders was contagious among only equines and humans. Veterinarians and government officials advised farmers that glanders could remain dormant for seven to forty-two days before showing symptoms; anthrax resulted in a quicker death, taking up to three days to manifest symptoms that lasted half to a full day before death.[94] Like glanders, symptoms of anthrax did not immediately manifest following infection. Collecting samples or coming into contact with animal fluids could prove fatal to a human caregiver before symptoms even appeared. For example, John Standish, a veterinarian practising in Georgetown, Ontario, was one of the first Canadians to die from anthrax disease in 1914.[95] His death suggests that even some professional veterinarians were susceptible to the fatal disease. Therefore, the accumulation and dissemination of this knowledge became a critical weapon in the fight against the spread of both contagious diseases for veterinarians and government officials. As veterinary science advanced, veterinary inspectors travelling to rural communities and institutional laboratories were vital for identifying outbreaks and supplying the necessary diagnostic material—mallein for glanders and preventive vaccines for

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[93] "Questions and Answers: Fatality in Cattle," *The Farmer's Advocate and Home Magazine* L, no. 1187 (June 24, 1915): 1036.
[94] "Periods of Incubation or Latency of Disease," *The Farmer's Advocate and Home Magazine* XXXVII, no. 548 (April 21, 1902): 282.
[95] Georgetown, Ontario, is located approximately forty kilometres north-east of Guelph and fifty kilometres west of Toronto. C. A. V. Barker and Margaret Evans, *Century One: A History of the Ontario Veterinary Association, 1874–1974* (Guelph: Distributed by the Authors, 1976), 52

anthrax. The potential devastation that anthrax could cause encouraged scientists to develop new methods and use new technologies.

Improvements to the microscope provided both German and French scientists with the motivation to study small structures in the blood of animals that were previously invisible to the human eye.[96] In 1850, the French physician Pierre-François Olive Rayer and his student Casimir Davaine first observed the small rod-shaped anthrax cells in blood. However, they did not understand the totality of their observations.[97] Robert Koch, a German physician who specialized in infectious diseases and was a founder of modern bacteriology, expanded on their work when he discovered anthrax spores.[98] As he had made revolutionary discoveries that helped eliminate the spread of infectious diseases such as cholera, tuberculosis, and anthrax, scientists across Germany widely accepted his early work on the "life-cycle" of anthrax bacillus spores. However, Paul Bert, a French physiologist, and French microbiologist Louis Pasteur did not support Koch's conclusions. They did not believe that Koch's work confirmed the causational role that he attributed to the *anthrax bacillus*.[99] This opposition encouraged Pasteur to further Koch's research.[100] Pasteur confirmed that the spores caused anthrax disease before developing a vaccine in 1881.[101] Many professional veterinarians contested Pasteur's discovery, claiming that his use of a weakened version of the microbe meant that animals were merely being infected with the disease and would die as a result. However, after a challenge by the Melun Agricultural Society, Pasteur successfully inoculated

[96] Wilkinson, *Animals & Disease*, 126.
[97] Wilkinson, *Animals & Disease*, 126–127.
[98] Jones, *Death in a Small Package*, 45.
[99] K. Codell Carter, "The Koch-Pasteur Dispute on Establishing the Cause of Anthrax," *Bulletin of the History of Medicine* 62, no. 1 (Spring 1988): 42–57. 54.
[100] Lecture Memoranda, Canadian Medical Association, London, Ontario, *The History of Inoculation and Vaccination for the Prevention and Treatment of Disease* (London, Eng, New York, Sydney, Cape Town, Milan, Shanghai, Buenos Aires, Bombay, and Montréal: Burroughs Wellcome & Co., 1913), 111.
[101] The competition between French and German scientists continued with students of the Louis Pasteur Institute in Paris and the Robert Koch Institute in Berlin, both founded in honour of their respective work. Wilkinson, *Animals & Disease*, 166, 179–180; Jones, *Death in a Small Package*, 78.

twenty-five of fifty sheep. When the observers returned twenty-five days later, twenty-three sheep were dead, two were dying, and twenty-five sheep "were in perfect health."[102] This test proved Pasteur's theory to his critics and led to the global dissemination of the vaccine.

Though Louis Pasteur recognized the widespread devastation that anthrax could cause when he developed the vaccine in 1881, many farmers in Canada continued to mistake anthrax for other diseases that did not pose a risk to humans, including black leg, hog-cholera, and bovine pleuropneumonia. This confusion significantly increased the risk of infection from what many called symptomatic anthrax, which was curable.[103] In a note to the editor of *The Farmer's Advocate and Home Magazine*, veterinary surgeon Thomas V. Simpson remarked on a previous author having confused symptomatic anthrax and blackleg disease (once considered a precursor of anthrax) for "true anthrax or, as it is scientifically called *Bacteridium Anthrasis*."[104] Symptomatic anthrax, or "as it [was] commonly called, black leg or black quarter," affected young calves from six months to four years of age and was caused by the *bacterium chauvei* bacteria. This confusion persisted until different microbes were isolated and experimental inoculation proved they were "entirely different diseases."[105] Thus, it was important that farmers be informed of recent advances in veterinary science, to help them distinguish fatal zoonotic diseases and limit their spread—highlighting the importance of popular agricultural publications in disseminating knowledge.

The bacillis anthrasisi, or bacteridium anthrax, infects animals in environments where spores have laid dormant. In 1899, this confusion was significant because, as Dr. Simpson explained, "black

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[102] Rev. Professor George Bryce, Honorary President, "Louis Pasteur: The Great French Scientist," Inaugural Address - Manitoba Literary Society, Convocation Hall, Manitoba College, Winnipeg (November 6, 1903), CIHM/ICMH microfiche series; no. 73706, 14.
[103] Various publications note the confusion between anthrax, blackleg or black quarter, and symptomatic anthrax. Hodgins and Haskett, *The Veterinary Science*, Earlier Undated Edition, 488 also outline confusion with hog cholera and Peter A. Koolmees discusses mistaking contagious bovine pleuropneumonia in "Epizootic Disease in the Netherlands, 1713–2002: Veterinary Science, Agricultural Policy, and Public Response" in Brown and Gilfoyle, *Healing the Herds*, 27.
[104] "Anthrax in Calves," *The Farmer's Advocate and Home Magazine* XXXIV, no. 472 (February 15, 1899): 95.
[105] "Anthrax in Calves," *The Farmer's Advocate and Home Magazine*, 95.

leg is an entirely different disease: the [often bovine] flesh may be eaten with impunity by the pig, and dog, and also by man, as they are entirely refractory to the disease." *The Farmer's Advocate and Home Magazine* recognized the importance of publishing this correction to distinguish between black leg, a disease that humans are resistant to, and anthrax, a fatal disease that could infect "animals of all ages and may spread as an epizootic in all species of animals excepts rats, but in most cases it confines itself to the bovine species."[106] This misunderstanding hindered the swift response necessary to isolate and prevent the spread of fatal contagions to humans and entire herds of animals through contaminated environments and contaminated animal products, such as meat and wool.

After a farmer or veterinarian detected anthrax, the destruction of the contagion and sterilization became paramount to limiting the spread. *The Farmer's Advocate and Home Magazine* provided similar instructions using carbolic acid in 1902 to disinfect environments housing glandered horses.[107] However, anthrax bacillus was unlike many other contagions. The anthrax bacteria can remain dormant for decades and disinfection methods were unsuccessful in eliminating the contagions. Anthrax could reappear in fields used for feed or pasture after years of disinfection methods being used.[108] While sanitary and hygiene advancements in veterinary science and the production of new chemicals in the early twentieth century helped to prevent the spread of glanders, these methods did not kill the anthrax bacteria or disrupt its ability to remain dormant. Consequently, veterinarians aimed to spread awareness about anthrax's ability to remain dormant, which ultimately highlighted the dangers it posed and emphasized the importance of obtaining veterinary services for identifying and containing the spread of disease in contaminated environments.

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[106] "Anthrax in Calves," *The Farmer's Advocate and Home Magazine*, 95.
[107] "Disinfecting Glandered Stable," *The Farmer's Advocate and Home Magazine*, 685.
[108] W. R. Gilbert, "Anthrax," *The Journal of Agriculture and Horticulture* 2, no. 1 (July 1, 1898): 23.

The ability to contain anthrax came down to two things: the dissemination of knowledge and the active role played by farmers in preventing its spread through the sale of meat. In 1907, *The Canada Gazette* published the process for inspecting and processing meat for consumption. Anthrax, along with diseases like hog cholera, blackleg, swine plague, tuberculosis, rabies, and others, was considered best treated when the entire animal could be "condemned and tanked."[109] The practice of burning carcasses on-site, including animal hides from infected cattle, contaminated collars, and even stable areas, while refraining from using any part of the animal for production or consumption, helped prevent the further spread of the disease. Farmers were also regularly advised to limit contact with suspected infections.

The *Animal Contagious Diseases Act* of 1906 emphasized the discretionary practices that animal caregivers should adopt to limit their exposure to the disease. The Act established new understandings of the spread of disease. It stressed the importance of disposing of the entire animal and refraining from using the hide, milk, or meat.[110] New regulations and legislation from the state reflected the emergence of microbial science and underscored the necessity of the veterinary profession to control outbreaks and enforce penalties for non-compliance.

In the early twentieth century, British veterinarians were also drawing attention to issues with outbreaks of anthrax spreading and contaminating new hosts in Canada. In 1908, *The Farmer's Advocate and Home Magazine* stressed that "while there [was] no pleuro-pneumonia in Canada, while [Canadian] herds are otherwise exceptionally healthy, and while no reasonable precaution is spared to keep them so, still they are not free from disease or the danger of disease."[111] Britain became

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[109] "Regulations Governing the Inspection of Meats, 1907," "Library/Canada Gazette Collection, 1867–1946 (Dominion of Canada), vol. 41, Extra, August 26, 1907," *The Canada Gazette: Published by Authority*, ID: 4027, 4/ Item 4, Library and Archives Canada, Ottawa, Ontario. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=cangaz&IdNumber=4027&q=anthrax.

[110] "Regulations [regarding], Anthrax, in cattle - approval of - Min. Agri. [Minister of Agriculture], 1906/07/27," Privy Council Office Collection, RG2, Series A-1-a, vol. 915, Access Code 90, ID: 140812, Library and Archives Canada, Ottawa, Ontario.

[111] "Health of Canadian Cattle," *The Farmer's Advocate and Home Magazine* XLIII, no. 841 (November 5, 1908): 1685.

more dependent on imported meat and animal products from Canada in the late nineteenth century, following the devastation caused by the spread of contagious livestock diseases. The *Contagious Disease (Animals) Act* privileged Canadian exports to Britain over those from the United States and Europe, and Canadian farmers and government officials recognized the need to produce healthy meat for trade.[112] Following an 1892 amendment that placed restrictions on Canadian beef, *The Scottish Farmer* reported that though Canadian cattle are healthy, "parasitic mange and anthrax [were] common (in Canada) … [because] [Canadians were] at all times exposed to the risk of infection from south [of the border]."[113] Emphasis on exposure from under-regulated disease environments in the U.S. was the result of Western settlement patterns that motivated Canadian officials to develop import and export policies to eliminate the spread of disease along the Western Canadian–U.S. border. Concerns over exposure to disease through trade and transportation persisted until after the First World War.[114]

In 1911, officials modified regulations for anthrax in the *Animal Contagious Diseases Act* with an amendment introducing a new process for approving compensation. The amendment stipulated that "a satisfactory report, order for slaughter, certificate of valuation and slaughter, and certificate of cleansing and disinfection, all signed by [a Veterinary] Inspector" must be submitted to the Minister of Agriculture. Only after these documents were approved would compensation be paid to the owner. Also included were measures for "cleansing and disinfect[ing]" the necessary area so as to not infect other animals or humans.[115] This was a departure from the 1906 regulations, where the individual veterinary inspector was responsible for prescribing methods to contain the incurable

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[112] Simon Evans, "Canadian Beef for Victorian Britain," *Agricultural History* 53, no. 4 (October 1979): 748–762.
[113] Evans, "Canadian Beef for Victorian Britain," 756; "Health of Canadian Cattle," *The Farmer's Advocate and Home Magazine* XLIII, no. 841 (November 5, 1908): 1686.
[114] "No more unbroken Bronchos," *The Gazette*, Glenboro, Manitoba, March 8, 1907.
[115] "Regulations re [regarding] Anthrax rescinded and new Regulations established - Min. Agri. [Minister of Agriculture] 1911/07/19," Privy Council Office Collection, RG2, Series A-1-a, vol. 1019, Access Code 90, ID: 301624, 2/Item 3, Library and Archives Canada, Ottawa, Ontario. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=ordincou&IdNumber=301624&q=anthrax.

disease at the expense of owners, and owners could face a penalty of not more than $2,000.[116] The amendment was swiftly published in the widely read *Canada Gazette*, ensuring its widespread distribution among farmers.[117]

In addition to controlling the spread of anthrax by regulating the use of meat or hides from diseased animals, officials recognized the importance of quickly recognizing the disease before anthrax could be spread through the sale of milk. The state thus relied on farmers to absorb and apply the knowledge it distributed to enable quick identification and limit the spread of disease. By 1914, according to Ontario's provincial laws regarding milk contamination, pure milk needed to meet the legal standards set by provincial and municipal governments. These rules stipulated that the herd must be free from diseases such as anthrax while containing "less than 200,000 bacteria per cubic centimetre (cc.) when placed in the hands of the consumer, and the bacteria must be non-pathogenic." However, anthrax was not the only disease tested for. Marion McKay's study of bovine tuberculosis and the pure milk campaign argues that the scientific debates surrounding this campaign enabled physicians and veterinarians to extend their professional practices—and gain authority.[118]

Debates over the merits of pasteurization began in the early twentieth century. The federal government did not mandate milk pasteurization until after 1991. However, Toronto, like Saskatoon, required milk pasteurization in 1914. Historians Catherine Carstairs, Paige Schell, and Sheilagh Quaile, argue that long before pasteurization became mandatory, public health authorities

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[116] "Regulations re [regarding], Anthrax, in cattle - approval of - Min. Agri. [Minister of Agriculture], 1906/07/27," Privy Council Office Collection, RG2, Series A-1-a, vol. 915, Access Code 90, ID: 140812, 5, Library and Archives Canada, Ottawa, Ontario. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=ordincou&IdNumber=140812&q=anthrax.

[117] "Orders in Council: At the Government House Ottawa," "Library/Canada Gazette, 1867–1946 (Dominion of Canada), vol. 40, no. 10, Regular Issue, September 8, 1906," *The Canada Gazette: Published by Authority*, 1841–1997, vol. 40, no. 10, ID: 3982, 581/Item 3, Library and Archives Canada, Ottawa, Ontario. Available from Library Archives Canada Online: https://recherche-collection-search.bac-lac.gc.ca/eng/home/record?app=cangaz&IdNumber=3982&q=anthrax.

[118] Marion McKay, ""The tubercular cow must go": Business, Politics, and Winnipeg's Milk Supply, 1894–1922," *Canadian Bulletin of Medical History* 23. no. 2 (2006): 355–80.

in Saskatoon worked in and collaborated closely with large dairies to persuade farmers about the advantages of pasteurization.[119] However, early on, many contended that pasteurization actually facilitated the production of "dirty milk" because the process killed germs using heat, rather than focusing on the entire process of producing a healthy animal product. Throughout the twentieth century, Carstairs, Schell, and Quaile contend that corporate interests and "messaging probably had a much bigger role" in convincing Canadians to drink "pasteurized milk than the legislation actually did."[120]

Editors at *The Farmer's Advocate and Home Magazine* recognized that the pasteurization process was expensive for farmers. However, the authors reiterated that the purchasing public would appreciate these methods and "a long step will be taken in preserving the life and health of the human race" if farmers bore this expense.[121] Susan D. Jones argues that many people saw pasteurization as a means of "masking tubercular contamination and poor sanitation." At this point, many consumers viewed cattle diseases as environmental and bacteriological problems that must be solved. Zoonotic diseases were a vital concern throughout the purification process, blurring the lines between "urban and rural, production and consumption," and human and animal bodies, according to Jones.[122] By regulating the spread of disease at the consumer level, the provincial government placed a financial penalty on those farmers who did not recognize, contain, and eliminate the spread of disease early. Therefore, it was important for farmers to learn from and call on veterinarians to eradicate the spread of diseases affecting animals and humans.

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[119] Catherine Carstairs, Paige Schell, and Sheilagh Quaile, "Making the Perfect Food Safe: The Milk Pasteurization Debate," in *How Canadians Communicate VI: Food Promotion, Consumption, and Controversy*, ed. Charlene Elliot (Edmonton: Athabasca University Press, 2016), 163–183.
[120] Aaron Misener, "How We Came to Drink Pasteurized Milk," *Arrell Food Institute*, April 2, 2016. https://arrellfoodinstitute.ca/how-we-came-to-drink-pasteurized-milk/.
[121] "The Dairy: How a Farmer Graded up His Herd of Dairy Cows," *The Farmer's Advocate and Home Magazine* XLIX, no. 1084 (January 8, 1914): 46.
[122] Susan D. Jones, "Mapping a zoonotic disease: Anglo-American efforts to control bovine tuberculosis before World War I," *Osiris* 19 (2004): 134.

Over the course of the First World War, veterinarians and government officials recognized the catastrophe that an unchecked spread of fatal disease could have on both animals and humans when animals were transported over long distances and in close quarters. Anthrax does not appear to have been as concerning as glanders was to officials on the front lines. Both diseases were used by Germans as biological weapons (discussed later in this chapter)—for example, the artificial spread of both glanders and anthrax by diplomatic couriers in Romania to infect Allied animals and people.[123] The greater attention accorded to glanders in this period could be due to the fact that anthrax mainly infected cattle and sheep, which did not contribute to front line efforts in the same way that glanders did, due to its effects upon horses. Anthrax infections, however, continued to pose a threat to human combatants. For example, a commanding officer in the St. Francis Xavier College Medical Unit contracted anthrax poisoning during his work at the Bramshott Military Hospital and died less than a year after arriving in England in 1916.[124]

The shortages and social circumstances caused by the war encouraged both the Canadian government and people to "pay more heed" to scientists.[125] More than ever before, Canadian farmers and consumers now looked to scientists for solutions that would ensure the health of livestock that were for domestic consumption and international trade, and protect Canadian prosperity. The First World War exposed weaknesses or vulnerabilities in recognizing and

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[123] J. Murray Clark, *The Reign of Law* (Toronto: University of Toronto Press, 1918), 7; In addition to Romania, German forces used discrete anthrax packages to attack Mesopotamian, Argentinian, Norwegian, American, and Allied horses. Suzanna M. Lutwick and Larry I. Lutwick, *Beyond Anthrax* (Totowa, NJ: Humana Press, 2009), 6. Koenig examines instances where neutral and Allied forces caught German agents trying to infect Allied horses. Germans set up a small laboratory in New York to develop anthrax and glanders cultures to infect Allied horses. This type of sabotage, if left undetected, would have had a catastrophic effect, and could have devastated the Allied war effort. Robert L. Koenig, *The Fourth Horseman* (United States: Perseus Books Group, 2006), 141–143; Jones, *Death in a Small Package*, 136–143, and 147; Duffin, *A History of Medicine: A Scandalously Short Introduction*, 192, also examines a long history of animals use as biological weapons from 1320 BC to the Second World War when "both sides" "devoted scientific expertise to the weaponization of various pathogens, including anthrax, smallpox, and tularemia."

[124] M. Stuart Hunt, *Nova Scotia's Part in The Great War* (Halifax: Nova Scotia Veteran Publishing Co. Limited, 1920), 204 and 205.

[125] J. Murray Clark, *The Reign of Law* (Toronto: University of Toronto Press, 1918), 4.

eradicating the spread of zoonotic disease and encouraged some veterans and farmers to seek out veterinarians to quickly identify, regulate, and prevent the disease from spreading further.

Driven by a strong commitment to public service and efforts to reinforce their professional authority, the Ontario Veterinary College (OVC) recognized the need to assist farmers who could not seek veterinarians' assistance either because of cost or location. In 1917, OVC published an advertisement in *The Farmer's Advocate and Home Magazine* listing its professors and experts who were available to help identify and dispose of infected animals and materials in shared environments.

Figure 4.3: Ontario Department of Agriculture's advertisement for the Ontario Agriculture College

Source: "Information Practical and Profitable – Write for it," *The Farmer's Advocate and Home Magazine* LII, no. 1293 (July 5, 1917): 1116.

As the advertisement in Figure 4.3 illustrates, while portraying idyllic pictures of the Ontario Agricultural College's farming facilities, veterinarians beseeched farmers to write for help. At the same time, they appealed to reluctant farmers who valued experiential knowledge over top-down knowledge, stating that they should not "expect the Ontario Agricultural College to run [their] farm better than [they] can [themselves]." Instead, the college suggests that they can assist farmers who lacked time to investigate pertinent issues.[126] Farmers were encouraged to write to Professor D. H. Jones describing the "symptoms, causes, and cure of infectious or contagious animal diseases," such as anthrax. OVC professors would test samples, provide information on the causes, and recommend remedies.[127] This direct approach appealed to farmers with experiential knowledge and allowed the college to track, quickly identify, and eradicate anthrax outbreaks in a manner that would control and limit the spread of the disease in the future. Opening a dialogue with farmers allowed veterinarians to justify the importance of their work to farmers and disseminate knowledge of veterinary science, which eventually led veterinarians to gain the authority needed to limit the spread of disease in Ontario.

The slow, uneven growth of veterinary authority, achieved through collaborative efforts between state officials and veterinarians, supported the provincial government's and OVC's vaccination program. Pasteur's development of a vaccine using an "attenuated virus" to prevent anthrax disease was effective at defending against anthrax infections. Veterinarians first employed the vaccine in France, Russia, and eventually the United States and Canada. However, initially, it was not suitable for long-term storage. If the vaccine "could not be obtained within a few days of being manufactured, its use was found to be impracticable, as it [would] not keep long under any conditions." Scientists had realized that using a vaccine that was kept too long or "carelessly

[126] The final chapter on professionalization further explores this reciprocal relationship between farmers and veterinary professors.
[127] "Information Practical and Profitable – Write for it," *The Farmer's Advocate and Home Magazine*, 1116.

prepared and tested" would allow anthrax to continue its fatal course.[128] Therefore, although veterinary professionals could obtain and administer the vaccine, it was not initially suitable for treating animals across Canada (unlike the black leg or symptomatic anthrax vaccine, which could be obtained from the Pasteur Vaccine Company in Chicago or in Walkerville, Ontario, where it was manufactured) and farmers could administer it without the assistance of a veterinarian.[129]

By 1918, agricultural periodicals regularly cautioned that livestock could be infected with anthrax despite appearing healthy a few hours before their sudden death. However, according to *The Farmer's Advocate and Home Magazine*, "infection as a rule [took] place about three days before death occur[ed]." Infections could also occur among cattle that were grazing on contaminated land. As a result, in an article entitled "Anthrax – Its Symptoms and Prevention," the authors warned farmers that "owing to the very short course which the disease runs, treatment for anthrax [was] rendered almost impossible." However, following Pasteur's attempted development of the anthrax vaccine in 1881 and its success, finally in 1918, agricultural periodicals began to emphasize the effectiveness of vaccinating entire herds to prevent the devastation caused by anthrax. By 1918, Canada's Biological Laboratory produced anthrax vaccines that were "supplied through the office of the Veterinary Director General to qualified veterinarians."[130] The vaccines cost five cents per dose[131] and were administered in two doses, which would cause the animal to undergo "two mild, properly graded attacks of the disease" causing "slight" fevers. Following both doses, immunity against anthrax would be established within "twelve to twenty days." The article's authors cautioned that farmers or veterinarians administering the vaccine should shield animals from "inclement weather" and extreme

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[128] Duncan McEachran, Chief Veterinary Inspector for Canada, "Anthrax and Symptomatic Anthrax," Farmers' Bulletin No. 5, Department of Agriculture (Ottawa: Government Printing Bureau, 1907): 5.
[129] McEachran, "Anthrax and Symptomatic Anthrax," 6.
[130] "Anthrax – Its Symptoms and Prevention," *The Farmer's Advocate and Home Magazine* LIII, no. 1344 (June 27, 1918): 1092.
[131] Chas. H. Higgins, Pathologist, Biological Laboratory, Ottawa, "Anthrax," Bulletin No. 23, Health of Animals Branch, Department of Agriculture, Ottawa (November 22, 1916): 8.

cold or heat and keep them from grazing on infected pastures or hay while undergoing treatment. Not doing so could cause a severe outbreak of the disease. Dr. Higgins cautioned in Bulletin No. 23 of the Health of Animals Branch, Department of Agriculture Canada, that using the vaccine on an animal already infected with anthrax would not treat or protect the animal.[132] Disseminating the anthrax vaccine to professional veterinarians trained in the precautions necessary to administer the vaccine thereby limited the spread of anthrax to humans. As a result, the Canadian government was able to educate farmers while also providing a crucial preventive tool. To limit the spread of this devastating disease, the Canadian government developed measures for producing and administering the disease on a scale only achievable by Canada's qualified producer, Biological Laboratory. Increasing production to meet demand and encouraging farmers to rely on veterinarians with professional knowledge of the disease helped public health officials prevent anthrax from infecting other animals and humans in the same environment.

Disease Commonalities

Glanders and anthrax share several commonalities: they were often mistaken for other diseases; they can remain dormant for an extended period of time (glanders can remain asymptomatic in its host for days, weeks, or months, and anthrax can lay dormant in environments for decades); and they can be fatal for humans and animals (zoonotic)—not to mention that both diseases were used as weapons of biological warfare in the First World War. The transmissibility to people was recognized in 1769 in France for anthrax and, though initially disputed, was realized in the mid-nineteenth century for glanders.[133] Both diseases affected humans working in close quarters with infected animals and animal by-products sold for human use and consumption. Animal–human interactions,

[132] Higgins, "Anthrax," Bulletin No. 23, Health of Animals Branch, 7.
[133] Lise Wilkinson, *Animals & Disease: An Introduction to the History of Comparative Medicine* (Cambridge: Cambridge University Press, 1992), 124 and 116–123.

such as diagnostic or post-mortem testing, the transfer of mucus or blood through a cut on a human hand, or working with infected hides or wool, facilitated the transfer of contagions from animals to humans. The initial undetectability and fatal nature of glanders and anthrax motivated the veterinary profession to expand its research.

In the early nineteenth century, scientists and veterinarians were propelled by the advancement of scientific techniques and methodologies, the "accelerating evolution of rational scientific inquiry," and an increase in animal experiments to shed new light on public health challenges and inform the development of regulations.[134] However, the success of efforts to combat the spread of fatal, contagious diseases, such as glanders and anthrax, hinged on two things: the ability of veterinarians, government officials, and farmers to collaborate, and the need for veterinarians to communicate better with farmers and experiential experts in rural communities to help execute new research-based policies and regulations. With both diseases remaining highly contagious and fatal to animals and humans to this day, it became vital in the late nineteenth and early twentieth centuries to communicate scientific knowledge and develop preventive regulations limiting the spread of these zoonotic diseases.[135] Historical accounts of the challenges faced by those looking to maintain human, animal, and environmental health and limit the spread of disease offer insight into how changes to the animal–human relationship affected the growth of public health practices.

In Canada, veterinarians recognized the need to disseminate knowledge and develop regulations that could contain and prevent future outbreaks of incurable diseases, such as glanders and anthrax, even before the outbreak of the First World War. They collaborated with government

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[134] Abigail Woods, Michael Bresalier, Angela Cassidy, and Rachel Mason Dentinger, *Animals and the Shaping of Modern Medicine: One Health and Its Histories* (Cham, Switzerland: Springer, 2017), 3.

[135] Rabies is also a highly contagious and fatal zoonotic disease that posed a substantial risk to humans during this period. However, rabies was not associated with the most economically valuable livestock animals.

officials, implementing sanitary regulations to control the spread of epidemics and conducting precautionary inspections to limit the transmission of fatal, incurable, contagious diseases through markets and across international borders. Veterinary officials, driven by public health, farming, and economic growth, also published protocols in agricultural periodicals to inform farmers of new regulations and policy amendments. Institutional veterinarians built relationships with farmers to implement these measures. OVC also enhanced its curriculum to include knowledge of research-based regulations and advancements in veterinary science following the First World War. By the 1930s, OVC was already examining students on the knowledge required to identify and contain incurable outbreaks quickly. Public health officials prioritized diseases that affected humans and animals in shared environments. Though the term One Health, which focuses on the interdependence between human, animal, and environmental health, grew in the twenty-first century, it is clear that similar early approaches helped officials defend against "shared threats" to public health.[136] There was perhaps no better illustration of this than in the cases of glanders and anthrax, where the proactive collaboration among farmers, veterinarians, and government officials proved vital to implementing preventive measures that effectively reduced the spread of these incurable zoonotic diseases in Canada. In the case of glanders, this partnership ultimately led to its eradication.

People who relied on horses for transportation or labour were particularly susceptible to contracting glanders. Early in this period, many farmers relied on horses every day for transportation and labouring in fields and clearing bush. In the First World War, equines were integral to war efforts at home and on the Front.[137] Later in this period, people relied on horses for other tasks such

[136] Woods et al., *Animals and the Shaping of Modern Medicine*, 3.
[137] The term equines refers to members of the horse family, including mules, donkeys, and horses.

as delivering milk or their integral role in urban street railway systems.[138] Mucus was transferred during such daily interactions and when testing for glanders without the benefit of protective equipment. The use of a diagnostic agent left humans susceptible to contracting the fatal zoonotic disease during regular encounters or while administering testing regulations. Just as glanders can remain dormant in equine animals, anthrax can remain dormant for a long time in the environment. Thus, people who worked in abattoirs, laboured in fields where anthrax may remain dormant until exposed to a host, worked with infected hides or wool, or worked with animal by-products could inadvertently transfer anthrax contagions.

Despite the opposition of professional veterinarians and state officials to the publication of experiential knowledge, they relied on these publications to disseminate pertinent public health information. They also relied on some support from experiential practitioners, who, under the regulations, were required to call for professional veterinary inspectors to investigate any suspected outbreaks. By 1906, two years after the start of a campaign to eradicate glanders in Canada, *The Farmer's Advocate and Home Magazine* published a lengthy, detailed description of glanders—how to detect glanders using the new mallein test, symptoms of a reaction to mallein, clinical symptoms, modes of disinfection, causes for the spread, and finally a blunt conclusion: "[T]he only treatment for glanders in horses is the bullet."[139] The author stated that it was important for horse owners to be aware of the fatal disease and the fatalities it could cause. At this time, glanders was "well-known and understood by the modern veterinarian" through their institutional training. Popular articles advised horse owners to "suspect every nasal discharge as dangerous until proved harmless."[140]

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[138] Historians Clay McShane and Joel Tarr argue that from the 1850s to the 1910s, electrification eventually supplanted the horse-drawn streetcar, However, prior to that, this would have been the most populous horse population in a city. Clay McShane and Joel Tarr, *The Horse in the City: Living Machines in the Nineteenth Century* (Baltimore: Johns Hopkins University Press, 2007).

[139] "Glanders and Its Detection," *The Farmer's Advocate and Home Magazine,* 1015–1016.

[140] "Glanders and Its Detection," *The Farmer's Advocate and Home Magazine,* 1015.

Following Canadian veterinarians' role in combatting glanders in all equines during the Second South African War, many modern veterinarians also had considerable experience trying to diagnose and destroy the disease in confined spaces. The measures taken by veterinarians and government officials illustrate the value that they assigned to preventing future outbreaks.

While educating the public about the characteristics of zoonotic diseases is important, it is an entirely different challenge for professional and state veterinarians to communicate their best practices to experiential practitioners and farmers. It is possible that, by emphasizing the need to call a veterinary inspector, some professional veterinarians overlooked the importance of farmers' initial methods of observation. However, it is also possible that experiential practitioners and farmers overlooked the importance of methods to prevent exposure to the fatal, contagious disease. In 1907, the "Revised and Enlarged" 107th edition of *The Veterinary Science* detailed observable symptoms and illustrated methods for examining nasal discharge. Despite the scientific veterinary advancements made by the time of publication, the authors, Hodgins, a professionally trained veterinarian, and Haskett, a self-proclaimed veterinary dentist, instructed their readers to observe differences between glanders and other diseases. For example, they emphasize that the "discharge of glanders… sinks in water, while the discharge of other diseases floats," and it is "odourless, here again different from nasal gleet."[141] The authors warn farmers, "when [glanders] attacks man it is a terrible affliction, consequently it is absolutely important when it is known to exist that the very greatest care in handling it should be exercised."[142] However, leading up to a diagnosis, few precautionary measures existed in their instructions. In the author's illustration, an ungloved human hand lifts the edge of the horse's nostril to inspect the discharge (Figure 4.4).

[141] J. E. Hodgins and T. H. Haskett, *The Veterinary Science* (HRB-HH-0009, Museum of Dufferin Archives, Dufferin County, 1907), 226.
[142] Hodgins and Haskett, *The Veterinary Science*, 226.

Figure 4.4: Instructions show a human hand lifting the nostril to examine nasal discharge

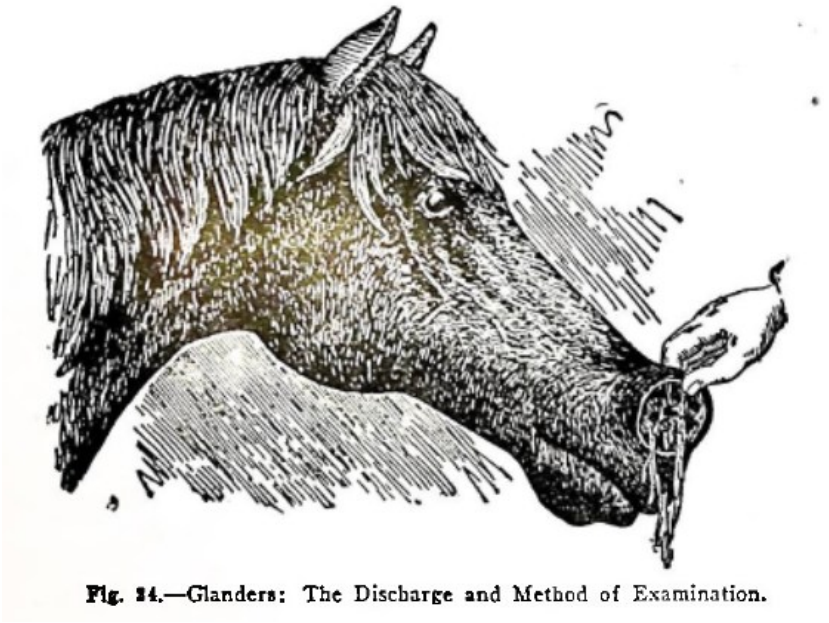

Fig. 14.—Glanders: The Discharge and Method of Examination.

Source: Hodgins and Haskett, *The Veterinary Science*, 226.

While Hodgins and Haskett include instructions for administering the mallein test if glanders was suspected, the examining person was likely already exposed to the glanders contagion following the initial examination.[143] Veterinary scientists in Canada introduced effective preventive measures to diagnose and quickly limit its spread. However, the potential danger to humans was still significant, as early detection and amateur instructions given in global publications continued to put them at risk of contracting and spreading glanders.

Officials frequently identified naturally occurring outbreaks through the systematic protocols they established after years of addressing glanders in markets and farming communities using legal recourse, education, and financial compensation. However, during the First World War, the German army recognized the potential devastation that glanders and anthrax could inflict. Both diseases were used by Germans as biological weapons—for example, the artificial spread of both glanders and

[143] Hodgins and Haskett, *The Veterinary Science*, 226.

anthrax by diplomatic couriers in Romania to infect Allied animals and people.[144] On multiple occasions in neutral countries like the United States and Belgium, the German military sought to use glanders contagions to infect the horses of Allied troops.[145] German forces also used discrete anthrax packages to attack Romanian, Mesopotamian, Argentinian, Norwegian, American, and Allied horses.[146] Historian Robert Koenig examines instances where neutral and Allied forces caught German agents trying to infect Allied horses with anthrax.[147] Both contagions became biochemical weapons. They were carefully administered by a German agent and produced in top-secret laboratories, one of which was located in New York City.[148] The German army recognized that both contagions posed a danger not only to the horses working in support of the war effort but also to soldiers on the front lines and to livestock. This type of sabotage, if left undetected, could have had a catastrophic effect, devastating the Allied war effort.[149]

Veterinarians and scientists reacted to the threat of glanders by developing a diagnostic agent, mallein, to identify the fatal zoonotic disease even when equines were not showing symptoms. In contrast, they employed a different preventive strategy to combat anthrax: the distribution of vaccines.[150] The long dormancy periods for both glanders (in equines) and anthrax (in environments) posed a significant problem for humans, underscoring the vital importance of combatting zoonotic diseases to government and health officials. However, their approaches shifted from reactive (focused on treatment) to preventive methods.

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144 J. Murray Clark, *The Reign of Law* (Toronto: University of Toronto Press, 1918), 7; Duffin, *A History of Medicine: A Scandalously Short Introduction*, 192, also examines a long history of animals use as biological weapons from 1320 BC to the Second World War when "both sides" "devoted scientific expertise to the weaponization of various pathogens, including anthrax, smallpox, and tularemia."

145 Susan D. Jones, *Death in a Small Package: A Short History of Anthrax* (Baltimore: Johns Hopkins University Press, 2010), 136, 138, 146.

146 Suzanna M. Lutwick and Larry I. Lutwick, *Beyond Anthrax* (Totowa, NJ: Humana Press, 2009), 6.

147 Robert L. Koenig, *The Fourth Horseman* (United States: Perseus Books Group, 2006), 141–143.

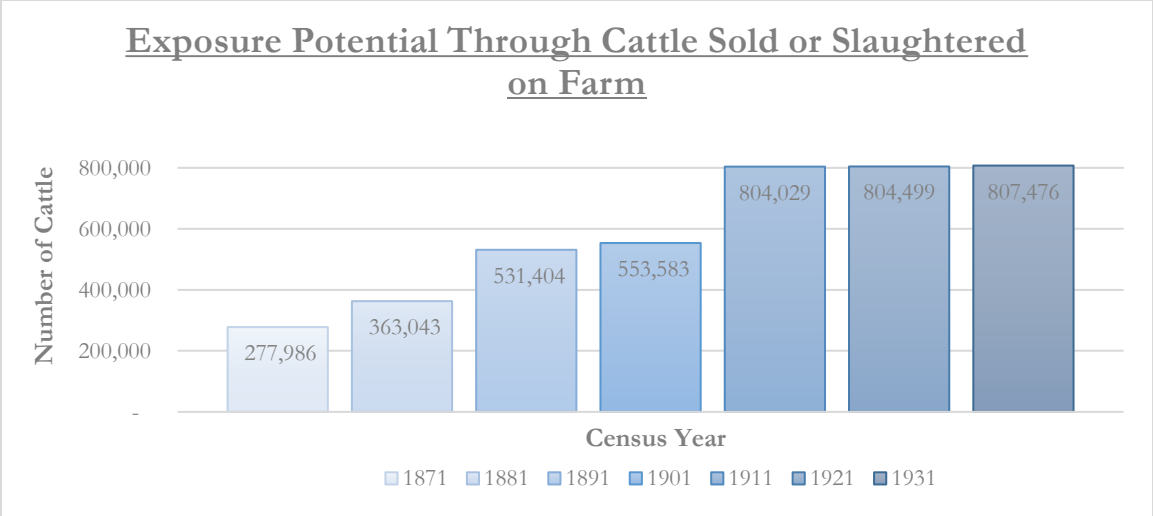
148 Jones, *Death in a Small Package: A Short History of Anthrax*, 136, 138, 146.

149 Koenig, *The Fourth Horseman*, 141–143; Jones, *Death in a Small Package*, 136–143, and 147.

150 The transition from reactive and curative medicine to preventive strategies is discussed earlier in Chapters One and Three. See, Duffin, *A History of Medicine: A Scandalously Short Introduction*, 63, 127, 177, 182, 184, 194, 202, 270, 398.

Although many recognized the sudden, fatal nature of anthrax, few people realized the anthrax bacillus's ability to contaminate an environment for a prolonged period—twenty years according to *The Stockman's Guide and Manual to Husbandry* in 1903.[151] Few publications recorded this crucial element. While many publications recognized the need to dispose of infected material and carcasses by burning (especially in the case of glanders), few recognized the dangers associated with grazing livestock or coming into contact with the dormant bacteria that affected animals and humans in shared environments until the First World War and immediately afterward. This led to a shift towards preventive veterinary medicine. The zoonotic nature of the anthrax contagion could also spread in animal by-products such as meat, wool, or hay from environments infected by the contagion.[152] Humans' susceptibility to exposure is highlighted in the following charts (Tables 4.2 and 4.3), which illustrate the amount of meat and wool processed from 1871 to 1931.

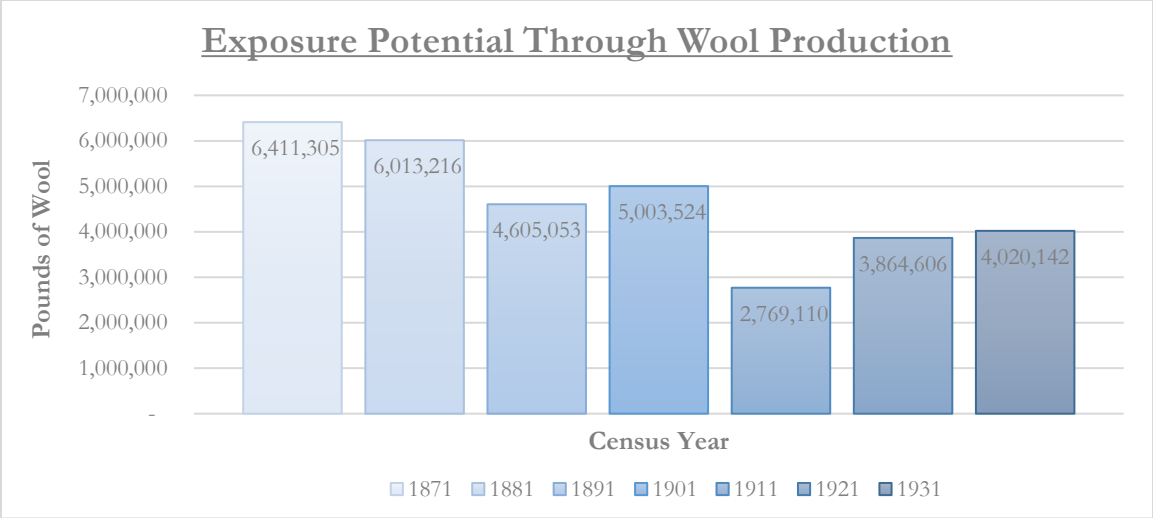
Table 4.2: Number of cattle processed for meat consumption on Ontario farms from 1871 to 1931



Source: The number of equines in this chart includes horses over three years of age, colts and fillies, and mules, Department of Agriculture, "Census of Agriculture, 1871-1911 [Ontario] [Excel]," Borealis, 2023. https://doi.org/10.5683/SP3/2YVN82; *Census of Canada,* 1921, vol. 5—Agriculture, 747; 1931, vol. 8—Agriculture, 462.

[151] Andrew A. Gardenier, *The Successful Stockman and Manual of Husbandry* (Springfield, Mass: The King-Richardson Co, 1903), 666.
[152] Jones, *Death in a Small Package*, 29.

Table 4.3: Pounds of wool processed on Ontario farms from 1871 to 1931



Source: The number of equines in this chart includes horses over three years of age, colts and fillies, and mules, Department of Agriculture, "Census of Agriculture, 1871-1911 [Ontario] [Excel]," Borealis, 2023. https://doi.org/10.5683/SP3/2YVN82; *Census of Canada,* 1921, vol. 5—Agriculture, 747; 1931, vol. 8—Agriculture, 462.

The study of anthrax has been a focus of interest for both veterinarians and historians for over a century.[153] In late eighteenth-century France, physician and medical officer Jean Fournier reported cases of "industrial anthrax" that resulted from a "growing market at home and abroad" for wool blankets.[154] The expansion of textile factories in nineteenth-century northern England led to anthrax being called "woolsorters disease."[155] In 1915, in response to dangers associated with "unclean wool," *The Athens Reporter*, a local newspaper in Leeds County, Ontario, where wool manufacturing was paramount, wrote that the "dissemination of knowledge and recognition of the dangers" were not "lessening the risk; nor have any practical means of disinfecting the goods as yet met with the approval of the trades concerned."[156] The article argued that since there wasn't a dry

[153] Woods et al., *Animals and the Shaping of Modern Medicine*, 74 and 85.
[154] Wilkinson, *Animals & Disease*, 124.
[155] Wilkinson, *Animals & Disease*, 125; Jones, *Death in a Small Package*, 81–93, 99–124, 199.
[156] Janine Roelens and Kris Inwood, ""Labouring at the Loom": A Case Study of Rural Manufacturing in Leeds County, Ontario, 1870," in *Canadian Papers in Rural History*, ed. Donald H. Akenson (Gananoque, Ontario: Langdale Press, 1990), 215–235; "Danger in Unclean Wool: Must Disinfect Product to destroy Anthrax Bacilli," *The Athens Reporter*, XXXI, no. 7, February 17, 1915.

method of disinfecting that did not harm the quality of wool, there was "undoubtedly a field for research which holds out possibilities of very practical results."[157] In 1920, *The Farmer's Advocate and Home Magazine* dedicated an article to the importance of using disinfectants. The author contended that farmers should "partially control" the spread of "tuberculosis, anthrax, Black Leg, contagious abortion, foot-and-mouth disease, hog cholera and others" by "thorough disinfection which [would] prevent the contamination of stables and healthy stock." The author outlined substances available to farmers to disinfect a contaminated environment, and included "simple materials which [could] be purchased at any drug store" such as "carbolic acid, milk of lime, chloride of lime, etc." and other "commercial preparations" like "various coal-tar disinfectants" that were used with "varying success."[158] In A. R. Colman's OVC lecture notes from 1904, he noted that "dry heat about 230° Fahr[enheit]" should be used to disinfect wool.[159] The article cautioned that the farmer should remember to clean "the walls, floors, and fittings of the building" before "applying disinfectants" and remember to dispose of the materials used to disinfect by burning them "as quickly as possible."[160] The author's focus on new disinfectants shows the efforts taken to increase the effectiveness of disinfectant products while also indicating humans' reliance on healthy environments, animals, and animal by-products. As veterinary science advanced and veterinarians became more aware of specific characteristics of different bacteria, people were able to develop new approaches to disinfection to further limit the spread of disease from animals to humans.

Eventually, presumably due to the submission of untestable or inconclusive samples, the Ontario Department of Agriculture reached out to farmers through rural publications to further

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[157] "Danger in Unclean Wool: Must Disinfect Product to destroy Anthrax Bacilli," *The Athens Reporter*, February 17, 1915.
[158] "Various Disinfectants for Farm Use," *The Farmer's Advocate and Home Magazine* LV, no. 1454 (August 5, 1920): 1378.
[159] A. R. Colman, "Materia Medica," n.d., CA F168-7-45, RE1 OVC A0148, Box 2, File 2.4, A. R. Colman Collection, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 1-2. Though these lecture notes are undated, they are in a similar style to later lecture notes from OVC. We also know that Colman graduated from OVC in 1904. His graduation is recorded in an OVC bulletin article from volume XIV, no. 3 (Fall 1964).
[160] "Various Disinfectants for Farm Use," *The Farmer's Advocate and Home Magazine*, 1378.

advise them on collecting and submitting a sample for testing at their bacteriological laboratory in 1921. *The Waterdown Review*, a newspaper located south of Guelph, Ontario, suggested removing the ear of the infected animal and sending it in a sterilized container or "disinfectant moistened cheesecloth" to the department's Bacteriological Laboratory for examination. The author cautioned that opening the carcass to obtain a sample would continue to infect those sharing this environment for the foreseeable future.[161] Though these instructions exposed humans to the contagion, the department believed it did so in a less susceptible, possibly utilitarian, manner that would prevent the spread of anthrax across Ontario.

The importance of education in helping to limit the spread of zoonotic disease extended beyond farmers. To effectively practise veterinary medicine using contemporary veterinary science, OVC needed to educate future veterinarians about the potential devastation of activated anthrax contagions. This remained a priority into the 1930s. In 1931, OVC considered it essential for third-year students to understand diseases where the "causal agent ... usually inhabits the soil" and identify the differences between blackleg and anthrax.[162] A year later, in their fourth-year class, students answered an exam question that asked about the "precaution[s]" that they should take for "a suspected outbreak of anthrax."[163] Fourth-year students in 1938 responded to questions that compared similar zoonotic diseases, such as glanders, anthrax, and blackleg, among others.[164] The ongoing examination of veterinary students on preventive measures for incurable diseases like

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[161] Ontario Department of Agriculture, Toronto, "Veterinary Specimens: Submitting for Bacteriological Examination. How to Prepare for Testing When Animals Die Suspected of Such Dangerous Disease as Rabies, Anthrax, Blackleg, Contagious Abortion, Etc.," *The Waterdown Review* 4, no. 22 (October 6, 1921).
[162] "Ontario Veterinary College, Annual Examinations, 1931, Third Year, Infectious and Contagious Diseases, Examiner – C. D. McGilvray," CA F168-7-10, RE1 OVC A0108, Box 3, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.
[163] "University of Toronto – Department of Veterinary Science, Annual Examinations, 1932, Fourth Year, Infectious and Contagious Diseases, Examiner – C. D. McGilvray," CA F168-7-10, RE1 OVC A0108, Box 3, C. A. V. Barker Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.
[164] "Ontario Veterinary College, Annual Examinations, 1938, Fourth Year, Infectious Diseases of Animals, Examiner – C. D. McGilvray," CA F1-43-50, RE1 OAC A0667, Box 3, Ontario Agricultural College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario.

anthrax, even decades after the federal government implemented regulations, demonstrates the continuous commitment to limit the spread of fatal, contagious zoonotic diseases. This commitment reflects Canadians' recognition of the impact of an undetected outbreak on public health and economic growth.

During the late nineteenth and early twentieth centuries, veterinary knowledge evolved according to demands for eradicating the spread of diseases. Its evolution reflects the increased circulation of food animals in the late nineteenth century, the shift to industrial livestock farming, and the diseases that thrived in these environments. The threat of anthrax, which could remain dormant in the soil for decades, and glanders, which could remain undetectable in a horse for seven to forty-two days, was a significant challenge. Anthrax posed a risk to animal by-products like milk and wool, while glanders threatened those who worked closely with horses. The potential devastation of unrecognized and incurable zoonotic diseases in increasingly industrialized agricultural environments, where animal–human interactions were more frequent, underscored the necessity for veterinarians to step in. Professional veterinarians took on a greater role in implementing veterinary tasks that assisted in the state's regulation of animal healthcare, a crucial step in controlling the spread of contagious diseases among animals and between humans and animals. However, veterinarians required assistance from those working directly with animals to react quickly to new outbreaks and implement preventive measures.

Developments in veterinary science equipped veterinarians with research-based knowledge that supported the implementation of measures that would help to quickly recognize, diagnose, isolate, and prevent the spread of glanders and anthrax. However, detection methods such as diagnostic testing, post-mortem examinations, and amateur instructions like those asking unprotected humans to examine animals in close contact, still put farmers in a vulnerable position where they could contract and spread a fatal and incurable disease before a veterinarian had been

called. As the veterinary profession emerged and took on a more significant role in preventing the spread of zoonotic diseases, veterinarians also capitalized on ways to engage with ordinary farmers by disseminating new knowledge about livestock health and regulations.

Today, both glanders and anthrax still exist naturally in different parts of the world. Glanders, though eradicated in Western countries, remains "endemic" in Asia, Africa, parts of the Middle East, and South America.[165] Anthrax also continues to pose risks to animals and humans. Earlier this year, a case developed in Saskatchewan where the government warned farmers about the risks of cattle coming into contact with anthrax during summers where flooding and dry spells, excess runoff water, or ground excavation made environments more accessible than in the past.[166] In a similar incident this year, fifty hippos contracted the disease in Africa's oldest national park, the Virunga National Park in the Democratic Republic of Congo.[167] Since the mid-twentieth century, both medical and veterinary doctors have cautioned against exposure to these fatal, highly contagious zoonotic diseases. Later in the twentieth century, antibiotics began addressing the symptoms of both glanders and anthrax. However, prevention and destruction remain the methods for containing glanders, and vaccine programs continue to achieve the greatest success in defending against anthrax. Over time, veterinary efforts to disseminate knowledge in agricultural periodicals and newspapers encouraged farmers to adopt new animal healthcare practices, which in turn helped limit the spread of zoonotic diseases, increased farmers' reliance on professional veterinarians, and strengthened veterinary authority.

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[165] Canadian Food Inspection Agency, "Equine Glanders," Reference material, January 22, 2018. http://inspection.canada.ca/en/animal-health/terrestrial-animals/diseases/immediately-notifiable/equine-glanders; "Glanders," *WOAH - World Organisation for Animal Health*, n.d. https://www.woah.org/en/disease/glanders/.
[166] "Anthrax Confirmed in Cattle in the RM of Paynton No. 470," Government of Saskatchewan, May 14, 2025. https://www.saskatchewan.ca/government/news-and-media/2025/may/14/anthrax-confirmed-in-cattle-in-the-rm-of-paynton-no-470.
[167] James Gregory, "DR Congo: Anthrax Kills Dozens of Hippos in Virunga National Park," *BBC News*, April 8, 2025. https://www.bbc.com/news/articles/crldxpzr3ddo.

Chapter 5: Building Connections Between Farmers and an Emerging Veterinary Profession in the Interwar Period

Scientific advances and changes in the animal–human relationship—driven by the rise of industrial livestock farming and a growing demand for small animal medicine—were behind the evolution of veterinary medicine into the profession of today. To meet the economic needs of farmers who were embracing industrialized farming methods during this evolution, the Ontario Veterinary College (OVC) began to place more emphasis on scientific research. During the interwar period, OVC expanded its curriculum, research services, and laboratory facilities, and then encouraged farmers and local veterinarians to access its services and preventive medicine strategies (such as vaccines). OVC's response was occurring in tandem with the slow condemnation of experiential practitioners in Ontario. Still, despite the great strides being made by OVC to gain authority in the practice of animal healthcare, the veterinary profession continued to rely on a farmer's own healthcare knowledge and practices.

OVC faculty and government officials worked together with farmers to bridge the gap left by the decline in the number of experiential practitioners in rural communities. Eventually, this collaboration advanced veterinary medicine to meet growing economic demands for animal healthcare. As business owners, veterinarians in private practice focused their work on livestock that held economic value for owners. Historians have examined early twentieth-century relationships between humans and domesticated animals, including the shift from horses, oxen, and mules used for labour to small companion animals and animals involved in human leisure activities, such as race horses, and those for spectacle, such as elephants.[1] During the interwar period, Canada's urban

[1] F. Eugene Gattinger, *A Century of Challenge: A History of the Ontario Veterinary College* (Toronto: University of Toronto Press, 1962), 82–83. For more studies about this transitional period in the animal–human relationship, see Susan Nance, *Entertaining Elephants* (Baltimore: The Johns Hopkins University Press, 2013) for histories of circus elephants; and *Rodeo: An Animal History* (Norman: University of Oklahoma Press, 2020) for a history of rodeo horses in North America. See Gwyneth Anne Thayer, *Going to the Dogs: Greyhound Racing, Animal Activism, and American Popular Culture* (Lawrence, Kansas: University Press of Kansas, 2013), for a history of twentieth-century greyhound racing. See Nigel Rothfels,

population grew, which led to a demand for milk, meat, and other animal products.[2] National economic demand for livestock health naturally then guided the development of the veterinary profession, with many at OVC opposing the rise of small animal practices as companion animals were not food-producing. As we will see later in this chapter, evidence suggests that there was a gender dimension to the division between livestock animal and small companion animal medicine. OVC was of the view that it was the profession's duty to serve the nation's economic prosperity and support the regulation of food products in a post-war climate.

In 1922, following a move to Guelph, OVC Principal C. D. McGilvray wrote to Manning Doherty, Minister of Agriculture, of OVC's plans to develop through "academic, extension, and research areas for the next forty years." He outlined specifics for the "Extension of Veterinary Investigational Work, Extension Lectures, Short Courses for Veterinary Practitioners, [and the] Development of a College Practice and Clinics."[3] In outlining these notable changes and the rising stature of veterinarians, McGilvray recognized the necessity of a relationship between farmers, professional veterinarians, and veterinary institutions—which he pointed out already existed as of 1923. However, his vision for the future of veterinary medicine did not include all animals.

McGilvray vehemently opposed institutional investment in small animal veterinary medicine. Despite the progress made by institutional and professional veterinarians to serve the economic interests of Canada's burgeoning animal industries, challenges remained. Not all farmers were able to access veterinary services, even if some did recognize the "veterinary surgeon as an asset to the

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Savages and Beasts: The Birth of the Modern Zoo, for more on the birth of zoos and animals in captivity, as well as his work *Elephant Trails: A History of Animals and Cultures* (Baltimore: The Johns Hopkins University Press, 2021) for a history of elephant–human interactions. Also see Sandra Swart, *The Lion's Historian – Africa's Animal Past* (Johannesburg: Jacana Press, 2023) for a history of human's shared past with African animals and *Riding High – horses, humans and history in South Africa* (Johannesburg: Witwatersrand University Press, 2010), which explores the role of the horse in the colonial economies of South Africa.

[2] C. D. McGilvray, memorandum to Manning Doherty, Minister of Agriculture, 1922, in Gattinger, *A Century of Challenge*, 82 and 92.

[3] Gattinger, *A Century of Challenge*, 91–92.

animal industry." Moreover, typically only animals that held economic value received treatment.[4] The subsequent decades of extension and outreach services played a crucial role in shaping animal–human relationships.

Throughout the 1920s and 1930s, veterinary advances were not infallible. In this chapter, I first examine how veterinary medicine developed in response to the economic needs of individuals concerned with maintaining animal health—implementing strategies that laid the foundation for contemporary veterinary medicine. I then explore the profession's failures in the interwar period and how its responses at that time shaped its future. For example, unlike present-day veterinary medicine, gender values influenced the enrolment of women at institutions and the roles they played as graduates. The profession also responded to changing demands for animal health, such as increased consumption of meat and dairy products, and the rise of fox farming, as well as failures, including unchecked outbreaks of disease (Table V). In 1913, OVC's Principal, E. A. A. Grange, noted, "No one can tell what we in Canada may do year by year at this formative stage." In response to government pressure to adapt to the transformations that accompanied the interwar period, OVC aimed to equip private-practice and institutional veterinarians with the skills necessary to meet economic demand while addressing the needs of farmers and the state to maintain livestock health in increasingly industrialized farming operations.

OVC enhanced the professional authority of veterinarians through a collaborative approach, driven by the expansion of scientific and laboratory services, as well as other extension services, to Ontario's farming community. Extension services included programs meant to provide farmers and private-practice veterinarians with access to OVC's clinics and laboratories. Some of these services included specimen and blood sample analysis, treatments in OVC clinics, examination and

[4] "Farmers Benefit from Veterinary College Removal," *Farmer's Sun* (Toronto), March 8, 1923, 2, in Gattinger, *A Century of Challenge*, 93.

experimental treatments, as well as vaccine programs. In this chapter, I examine the OVC's research projects and the developments in veterinary science that its leadership communicated to farmers and practising veterinarians. The annual reports to Ontario's Minister of Agriculture offer insight into the authority granted to the college and the expectations that its faculty would find solutions to the animal health challenges facing Canadians. As scientific consensus on microbial disease transmission grew and the needs of industrial agriculture evolved, OVC's extension services—such as specimen and blood analyses, vaccinations, and other veterinary services—became more valuable and cost-effective for farmers and private-practice veterinarians. Consequently, professional veterinary services slowly replaced farmers' reliance on informal, experience-based animal healthcare.

To promote its work, OVC published numerous bulletins showcasing its efforts to "meet popular demand" each year.[5] Topics highlighted the importance that institutional veterinarians placed on sharing information about common animal health issues and justifying their role in society.[6] Examining these special bulletins in combination with OVC's annual reports to the province's Minister of Agriculture also shows the particular ideas and perspectives that the profession's leadership held about veterinary practice. Throughout this period, Peter Anderson argues that the Central Experimental Farm, a state-led institution for scientific agricultural research, similarly facilitated the "presentation of scientific data [as] part of Farm scientists' performance of masculine authority alongside their pretensions to practicality."[7] By tracking the changes made by

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[5] C. D. McGilvray, "Report of the Ontario Veterinary College, 1924," Toronto: The Ontario Department of Agriculture, 1925, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 53.

[6] In 1919, topics included "Incidents of Glanders in Horses and Man," "Maintaining the Health of Sheep for Increased Production," contagious diseases of importance to livestock owners, as well as "Recent Advances in Veterinary Education," and "Veterinary Usefulness to Live Stock Owners," in addition to "Contagious Abortion in Cattle." C. D. McGilvray, "Report of the Ontario Veterinary College, 1919," Toronto: The Ontario Department of Agriculture, 1920, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 6.

[7] Anderson's conclusions shed light on the competitive, masculine atmosphere of the veterinary profession, which is explored further in this chapter. Peter Anderson, "Field Experiments: Critical Historical Geographies of Canada's Central Experimental Farm, 1886–1938," (PhD Dissertation, Kingston: Queen's University, 2017), 102.

OVC leadership and the evolution of the source itself, I examine how key roles in economic development—and, arguably, nation-building— shaped the veterinary profession in Canada. Some of their preferences and perspectives were also gendered, shaping how they viewed the profession's future. This combination of sources provides insight into the stakeholders who shaped veterinary medicine. For example, gendered as female work, OVC's principal viewed small-animal medicine as less valuable than large-animal medicine, which was traditionally considered a masculine domain. His leadership reflected these values. Where possible, I also include evidence of women's experiences at OVC and of internal debates within the veterinary profession to illustrate these influences.

Throughout the First World War until it disbanded in 1940, the Canadian Army Veterinary Corps (CAVC) maintained livestock health as this was vital to transportation, sustenance, and limiting the spread of disease. The successful application of protocol and the management and inspection of animals helped the profession significantly. Soldiers and leaders widely recognized the efforts of veterinarians at war and on the home front. Furthermore, OVC's connection to federal and provincial governments helped to spur the profession's growth. The profession evolved to meet the demands of wartime and the significant social and economic changes that followed. As a result, the veterinary profession was viewed with more respect from veterans who had served alongside veterinarians, which helped them implement legislation following the war.

The number of veterinarians in Canada and Ontario declined following the implementation of the *Veterinary Science Practice Act* in 1920, before OVC's move to Guelph in 1922, as shown in Figure I. However, in 1928 during parliamentary debates about salaries and the supply of professional and technical officials in government roles, Simon Fraser Tolmie, a Conservative Member of Parliament, asked, "If the number of available veterinarians continues to reduce at the rate of 25 percent, as it has done since 1919, where in the future are we going to get our supply of

professional men for the health of animals branch?"[8] Calls were then made for the immediate review of what was considered professional and scientific credentials and the weight of experiential practices, which James Alexander Robb, a Liberal Parliamentarian and Minister of Finance and Receiver General, argued should be considered "the best of all universities—the university of experience within the service."[9] In response to the growing demand for inspectors who could help control the spread of disease and ensure a healthy food system, some individuals, like Robb, continued to value experiential knowledge over costly and time-consuming institutional training. This preference persisted despite the ongoing push for standardization and increased veterinary authority from within the profession. As a result, OVC faced growing pressure from the state to train individuals who would fill these public roles as demand for their work grew and evolved alongside the animal–human relationship and the economic demand for livestock health during the industrialization of agriculture.

During the interwar period, veterinary medicine reflected changes in animal–human relationships and Canada's economic growth (see Tables IV and V), as well as an evolution away from a reliance on horses and sheep to an increase in dairy cattle and chickens (see Tables II and III). Social and cultural changes at the time, including connections drawn between the emerging animal welfare movement in Canada, first-wave feminism, and the development of small-animal medicine, also influenced the development of veterinary medicine and animal-human relationships. This "profound transformation" reflected the growth in animal agriculture and the industrialization of food production—and as historians Susan Jones and Peter Koolmees argue, was the most

[8] Canada. *House of Commons, Parliamentary Debates*, "Canadian Hansard," 16th Parliament, 2nd Session, May 30, 1928 (Simon Fraser Tolmie). https://lipad.ca/full/permalink/851210/.
[9] Canada. *House of Commons, Parliamentary Debates*, "Canadian Hansard," 16th Parliament, 2nd Session, May 30, 1928 (James Alexander Robb). https://lipad.ca/full/permalink/851211/.

influential change in the animal–human relationship since the domestication of animals.[10] Veterinary medicine developed accordingly, with OVC professors' research focus on overcoming diseases that affected chickens, dairy cattle, and swine. OVC prioritized scientific research to address the demands of industrialized livestock healthcare over treating small animals of lesser value to the state.

Following a disruption in the global meat trade during the First World War, the market quickly rebounded before the economic depression of the 1930s.[11] Growing markets for meat, milk, and other animal products increased demand for veterinary inspections. Employing enough certified veterinarians to execute this work was part of regular discussions among officials at the federal and provincial levels.[12] Caring for food-producing animals and conducting sanitary and food safety inspections became key components of institutional veterinary education that veterinarians now undertook as demand for their work in the horse economy declined.[13] Parliamentary debates on food testing revolved around issues with the testing and supply of milk, in particular the potential exposure to tuberculosis from infected cattle. Veterinary institutions reformed their curriculum accordingly, implementing special courses, issuing bulletins, and embracing scientific equipment and facilities.[14]

Institutional veterinary education sought to meet regulatory demands throughout the early twentieth century by developing courses in sanitary and meat and dairy inspection, as shown in Chapter Two. Like the human medical profession, the veterinary profession "fiercely opposed oversight, which to them felt like 'socialism'."[15] Jones and Koolmees argue that veterinarians became

[10] Susan D. Jones and Peter A. Koolmees, *A Concise History of Veterinary Medicine* (Cambridge: Cambridge University Press, 2022), 203–204.
[11] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 214–215.
[12] Canada. *House of Commons, Parliamentary Debates*, "Canadian Hansard," 13th Parliament, 5th Session, March 17, 1921 (Simon Fraser Tolmie (Minister of Agriculture)). https://lipad.ca/full/permalink/592747/.
[13] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 215.
[14] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 216, 216–227.
[15] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 215–216.

"guardians" of the global food economy during this period.[16] Institutions like OVC led this transformation. Though their efforts were not infallible, their research investigations addressed livestock health challenges as they arose. They relied on farmers reporting health challenges and issued public education initiatives to bridge the gap between farmers and the profession due to the exclusion of experiential practitioners. However, this was not a quick process to bridge the gap. In 1933, William Richard Motherwell, a Liberal member of Parliament, argued:

> It would be nice to have a lot of private practitioners, but just now most farmers would take a chance doctoring their own animals rather than hunting up a veterinary and have him treat them and have to pay him. To employ a veterinary is undoubtedly the best practice as a general rule, but the thing is to pay for his services.[17]

Private-practice veterinarians concentrated on addressing the economic needs of farmers, while professional institutions catered to the requirements of the food industry and public health officials. Together, professional veterinarians, OVC, and the government have made gradual, albeit inconsistent, advancements in veterinary science. This progress has followed a non-linear path, influenced by the demands of stakeholders and regulatory requirements.

Veterinarians were at the forefront of the industrialization of animal agriculture, advancing veterinary science and developing public health policy in response to demand for healthy livestock. The profession as a whole helped shape livestock bodies and animals' external, industrializing environments.[18] The result was that livestock bodies and their "value as individuals disappeared in

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[16] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 212–216.
[17] Canada. *House of Commons, Parliamentary Debates*, "Canadian Hansard," 17th Parliament, 4th Session, March 31, 1933 (William Richard Motherwell). https://lipad.ca/full/permalink/994840/.
[18] Nancy Langston, *Toxic Bodies: Hormone Disruptors and the Legacy of DES* (New Haven: Yale University Press, 2011); Margaret Derry, *Art and Science in Breeding Chickens: Creating Better Chickens* (Toronto: University of Toronto Press, 2012); William Boyd, "Making Meat: Science, Technology, and American Poultry Production," *Technology and Culture* 42, no. 4 (October 2001): 631–64.

the 'production unit'."[19] This was never more evident than in OVC's annual reports to the Minister of Agriculture. As scientific investigations and experimentations became a prominent component of these reports, with the length of each report increasing substantially in the 1920s and 1930s, the transition from valuing individual animal lives to production or experimental units became apparent.[20] Increased livestock numbers meant farmers had less contact with individual animals, and farmers and veterinarians began focusing on herd health. Private-practice veterinarians filled the void left by experiential practitioners as certification requirements gained traction, which led veterinarians to become part of the "management team for the enlarging of herds and flocks."[21] Transitions in veterinary practice and institutional training during this period laid the foundation for what became present-day veterinary medicine.

Encouraging Research, Investigational Work, and Special Bulletins

Though veterinarians and public health officials acknowledged the social, cultural, and economic importance of animals in daily life, individual animals became increasingly "invisible." As science advanced, or possibly, in the case of the guinea pig, as the antivivisectionist movement developed, focus shifted from individual animals to animal species of economic value to humans.[22] In the early 1920s, OVC recognized the importance of research and experimentation in advancing veterinary science—marking a significant shift in its approach. Institutional veterinarians began asking farmers and local, private-practice veterinarians to transfer sick animals (or specimens) to OVC's facilities for examination and experimental investigation. This change provided farmers with access to OVC's

[19] Susan Jones, *Valuing Animals: Veterinarians and Their Patients in Modern America* (Baltimore and London: The Johns Hopkins University Press, 2003), 92.
[20] Joanna Dean, "Guinea Pig Agnotology," in *Traces of the Animal Past: Methodological Challenges in Animal History*, eds. Jennifer Bonnell and Sean Kheraj (Calgary: University of Calgary Press, 2022), 175–198.
[21] Jones, *Valuing Animals*, 92.
[22] Dean, "Guinea Pig Agnotology," in *Traces of the Animal Past*, 182 and 186.

laboratories and created opportunities for students to acquire practical skills through experiential learning.

OVC's focus on addressing the needs of farmers and public officials for healthy animals led to the animals becoming less visible. Suffering or ailments were reduced to a quantitative discourse. Investigations shifted focus from individual animals or small groups of livestock on specific farms or localities to broader investigations that spanned the province or the country. Veterinarians standardized descriptive and quantitative analyses based on evidence from numerous animal experiments, and from these data gained knowledge in and developed strategies for managing common health challenges in livestock on industrialized farms.

Increased scientific study and experimentation in expanding laboratory facilities sparked a change in the animal–human relationship, with animals becoming the subjects of scientific advancements. Many of the studies by Canadian historians focus on specific animal species and their role in scientific advancements.[23] However, Joanna Dean's work goes a step further, with the recognition that animals eventually "disappeared from view."[24]

The push for practical and experiential knowledge at veterinary institutions also contributed to the growing invisibility of animals that once held social, cultural, *and* economic value to Ontarians.

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[23] For histories of the animal–human relationship and its connections to science during the late nineteenth century, early twentieth century, and interwar period, see Dean's "Guinea Pig Agnotology," in *Traces of the Animal Past: Methodological Challenges in Animal History*; Sean Kheraj, "The Great Epizootic of 1872–73: Networks of Animal Disease in North American Urban Environments," *Environmental History* 23, no. 3 (July 2018): 495–521; Chapters 6: "Species at Risk: *C. Tentani*, the Horse, and the Human" by Joanna Dean and Chapter 7: "Got Milk? Dirty Cows, Unfit Mothers, and Infant Mortality, 1880–1940" by Carla Hustak in *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, eds. Darcy Ingram, Christabelle Sethna, and Joanna Dean (Calgary: University of Calgary Press, 2017); Margaret Derry, *Ontario's Cattle Kingdom: Purebred Breeders and Their World, 1870–1920* (Toronto: University of Toronto Press, 2001); Derry, *Art and Science in Breeding*; Margaret Derry, *Masterminding Nature: The Breeding of Animals, 1750–2010* (Toronto: University of Toronto Press, 2018); Margaret E. Derry, *Made to Order: The Designing of Animals* (Toronto: University of Toronto Press, 2022); Chapter 4 "Curiosity: The Scientific Reimagining of a Predator," in Stephanie Rutherford, *Villain, Vermin, Icon, Kin: Wolves and the Making of Canada* (Montréal: McGill-Queen's University Press, 2022).

[24] Dean's work looks at the role of guinea pigs and cattle in scientific research environments like Connaught Laboratories and the University of Toronto's research farm. Joanna Dean, "Animal Matters: Bovine Smallpox Vaccine at the Connaught Laboratories and University Farm," in *Landscapes of Science*, ed. Tina Adcock (Toronto: Network in Canadian History and Environment, 2019), 29–30; Dean, "Guinea Pig Agnotology," in *Traces of the Animal Past*.

Both diseased, for the purpose of curing and preventing livestock diseases, and healthy animals, for experimentation and research purposes (such as mice and guinea pigs), became increasingly invisible throughout the development of experimental research and the transition to herd health. These research processes reflected changes in animal-human relationships. Investigational studies gradually became a substantial component of OVC's annual reporting to Ontario's Minister of Agriculture and helped the institution standardize veterinary medicine.

Following the First World War, there was significant pressure within the veterinary profession to increase institutional enrolment and authority. The Ontario Veterinary Association (OVA) and OVC sought to eliminate popular forms of experiential learning, such as those transmitted through books or short courses, by advocating for government acts and legislative amendments that would bolster the profession's authority (see Chapter Two). These efforts, however, created a gap where experiential practitioners had previously served farmers when veterinarians were inaccessible. To address this void, institutions began to incorporate more practical training into their coursework. OVC's leadership recognized the need to provide practising veterinarians and farmers with access to its clinics, laboratories, and veterinary services. Students learned while working with specimens sent to OVC for analysis, as well as with livestock in its barns and other facilities. This change enabled a transition from observational and experiential training, which involved working with individual animals on family farms, to conducting herd research at institutional facilities and industrial sites, such as abattoirs and food processing plants. While the shift encouraged collaboration, it also served to increase the invisibility of animals—and fundamentally altered the relationship between humans and animals.

In December 1922, OVC moved into new facilities at Guelph, adjacent to Ontario's renowned Agricultural Institute (OAC), to facilitate the profession's changing priorities. The facilities offered better space for teaching, research, and laboratory work and fostered better

connections between faculty research and coursework.[25] With an increase in "research and investigational work," the college was able to hire additional faculty, including the Veterinary Director-General of Canada, Dr. F. Torrance, and establish barns that could house and isolate more animals. Students were taught about sanitary, healthy environments for animals and given practical experience on diseases and ailments to build on their classroom learning.[26] OVC's annual reports reflect this shift in focus as well, with more details on departmental research and clinical results.

Initially, OVC conducted its research both within its new facilities as well as in the field. Veterinary faculty and students would travel to rural areas to investigate an outbreak of disease; this work helped contain the spread of disease and introduced students to field research in the environments where disease originated and spread. But over time, as the college's research capacity expanded, farmers and private-practice veterinarians took animals and samples to the college for examination. This exposed a greater number of veterinary students to practical training.

In the course of investigating individual outbreaks on farms or numerous outbreaks across the province, OVC researchers would work in close collaboration with farmers and local veterinarians. In 1923 alone, researchers travelled to "widely separated districts of the Province of Ontario" to conduct research.[27] OVC researchers conducted experiments and collected information from farmers to help them identify, diagnose, and treat common ailments and outbreaks of disease. Moreover, they made recommendations based on their findings. They also maintained relationships

[25] C. D. McGilvray, "Report of the Ontario Veterinary College, 1923," Toronto: The Ontario Department of Agriculture, 1924, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 5.
[26] McGilvray, "Report of the Ontario Veterinary College, 1923," 5.
[27] In 1923, this included trips to observe damaged sweet clover and a new disease affecting cattle under the direction of the Department of Agriculture, to St. Marys to investigate five cattle that had died from pneumonia introduced by a recently purchased cow, to Simcoe to investigate anaemic lambs and a "heavy infestation by parasitic worms," to the Ontario Agriculture College to assist in its investigation of several reports of enzootic pig pneumonia, to Aylmer to investigate necrotic stomatitis in young pigs, and to Paris to investigate nasal catarrh in Rhode Island Red Fowl, while also examining the City of Guelph's milk supply at the request of the medical officer of health. McGilvray, "Report of the Ontario Veterinary College, 1923," 21–60.

with farmers from year to year to monitor their herd's health.[28] This spirit of collaboration was the backbone of OVC's work. The college relied on farmers and local veterinarians to report an outbreak, and in turn, veterinary faculty learned more about contagions and developed treatments and preventive measures with OVC's new facilities and equipment.[29]

Following OVC's relocation to Guelph, arrangements were made for cross-over instruction with OAC, with students at OAC given an opportunity to learn anatomy, Materia Medica, obstetrics, and diseases while OVC students were able to take courses in English, chemistry, botany, animal husbandry, civics, and economics, including a course on composition, public speaking, and journalism to "equip graduates … more adequately [to] take their proper places of influence in the communities in which they may be situated."[30] This collaborative approach underscores the path that OVC established before the war to equip veterinarians with the skills and professionalism necessary to "do justice to the people, and take proper care of their livestock interests, so that they may render the best service in a professional way to the people of the locality to which they go."[31]

When the American Veterinary Medical Association held its first meeting in Toronto in 1911, Dean Charles H. Stange, who brought medical reform and more "rigorous science" to the Iowa State Veterinary School, called not for an increasing number of veterinarians, but more "men capable of solving the many and complex problems incident to modern veterinary science."[32] Stange's remarks were met with applause from institutional veterinarians who commended him for

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[28] In 1923, the dissemination of animal health information included changes to the agglutination test and a modification to the complement fixation test following routine blood tests for contagious and infectious abortion, and results from bacteriological experiments that identified cases of roup and canker, and experiments to develop a vaccination for chicken pox. McGilvray, "Report of the Ontario Veterinary College, 1923," 21–60.
[29] McGilvray, "Report of the Ontario Veterinary College, 1923," 5.
[30] McGilvray, "Report of the Ontario Veterinary College, 1923," 14.
[31] E. A. A. Grange, "Report of the Ontario Veterinary College, 1911," Toronto: The Ontario Department of Agriculture, 1912, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 13.
[32] Norman F. Cheville, *Pioneer Scientists and the Great Animal Plagues* (Purdue University Press, 2021), 126; Richard P. Lyman (ed.), Proceedings of the American Veterinary Medical Association (Lansing, MI, 1911), 99, in Cheville, *Pioneer Scientists and the Great Animal Plagues*, 126.

having "the nerve" to make this claim, whereas those from private schools, similar to the London Veterinary Correspondence School, declared this to show a "lack of judgement."[33] This North American call to distribute people who reflected the benefits of high veterinary standards and professionalism to each "city, town, and village" in the province helped to standardize and advance the veterinary medicine profession. However, it was apparent that to maintain enrolment, veterinary institutions needed to offer a combination of theoretical and practical learning experiences that prepared them for their future role.[34]

Throughout the early twentieth century and into the interwar period, public health reformers addressed issues with milk supply and zoonotic contagions in urban environments. But for consumers and farmers alike, the production and transportation of healthy milk to urban environments raised concerns about rising milk prices as a result of investments in modern production techniques in Canada. Moreover, while consumers focused on the purity of the milk, farmers focused on milk production from disease-free cattle.[35] In an article from *The Globe*, the author noted the work done to prevent unhealthy products from entering Toronto and the need to expand these measures to "other centres." Dr. A. R. B. Richmond, who was "in charge" of food and milk inspection in that city, argued that milk inspection had "reduced infant mortality and assured citizens of good and unadulterated milk." However, he also recalled that from 1911–1912, "a great proportion" of milk entering the city was watered down, with 41.5 percent in 1910 and averages as high as 55 percent at times, while in 1925, only one such case was detected.[36]

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[33] Lyman, Proceedings of the American Veterinary Medical Association 99, in Cheville, *Pioneer Scientists and the Great Animal Plagues*, 126.
[34] Grange, "Report of the Ontario Veterinary College, 1911," 13.
[35] Andrew Ebejer, ""Milking" the Consumer? Consumer Dissatisfaction and Regulatory Intervention in the Ontario Milk Industry during the Great Depression," *The Ontario Historical Society* 102, no. 1 (Spring 2010): 37.
[36] "Further Develop Fluid Milk Sales: If Absolute Safety Guaranteed—Health Official Addresses Veterinarians," *The Globe (1844–1936),* Toronto, ON, February 13, 1925, 12; "Urges Milk Inspection in Every Municipality," *The Toronto Daily Stare (1900–1971),* Toronto, ON, February 13, 1925, 3.

The dilution of milk was also a problem in U.S. cities in the late nineteenth century. Historian Norman Cheville's research shows that not only did "crooked dairies" in large cities dilute with water, some also used "plaster of Paris (to make spoiled milk look white) and puréed animal brains (to give the appearance of a heavy cream layer)."[37] Harvey Washington Wiley, a chemist for the U.S. Department of Agriculture in 1883, had fought against these actions and the use of dangerous preservatives such as formaldehyde, borax, and copper sulfate for decades.[38] While methods of deception were not new in the early twentieth century, an increase in social regulation, scientific advances, and professionalization helped advance public health parameters.

Practitioners with experiential knowledge, rather than institutional knowledge, were condemned under the new measures. The focus among historians and professional veterinarians on condemning those who practised "crooked" or "quack" medicine and miracle cures has overshadowed the good intentions of farmers and experiential practitioners whose sole focus was on producing healthy livestock in healthy environments. Condemnation of experiential practitioners (and ironically, their experiential knowledge, despite OVC's efforts to implement experiential learning opportunities, as I discuss in Chapter Two and later in this chapter) also helped lay the foundation for larger-scale and standardized approaches.

To quell the efforts of rogue producers, municipalities called on the provincial government to unify production standards. Toronto's Food and Milk Inspectors continued to "[turn] back" a large quantity of milk and meat. Dr. J. H. Laurie of the Toronto Health Department wrote a paper entitled "Milk Inspection and Its Relation to the Veterinarian," where he cautioned that people had consumed milk in communities that lacked control (or inspection) measures after Toronto had turned away a shipment of milk.[39] In 1925, Toronto's Food and Milk Inspection Agency called on

[37] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 108.
[38] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 107–108.
[39] "Urges Milk Inspection in Every Municipality."

the veterinary profession to "do a public service by pressing for inspection" in communities where it did not already exist.[40] Advocating for increased measures in municipalities would help their veterinary businesses and "public welfare," some argued.[41] Increased calls for regulating individuals who practised as local professional veterinarians and for educating inspectors would unify approaches and prevent scenarios where unhealthy livestock products could affect consumer health. However, disagreements over power, authority, necessity, and inspection measures in and outside the profession were plentiful.

The "milk wars," as they became known, caused great debate across Ontario and even throughout North America in the early 1930s. Unregulated competition, combined with declining milk prices, impoverished consumers, and the elimination of small businesses by large corporations, led to the disappearance of many family farms and small dairies.[42] Historian Andrew Ebejer claims that the *Milk Control Act* was "vaguely written" and represented Ontario's Conservative government's belief in minimal market regulations. The Act oversaw semi-annual testing and monthly veterinary inspections of herds to "certify non-pasteurized milk" in 1927. However, according to *The Toronto Daily Star*, its measures were "so strict … mak[ing] its general use impossible."[43] As a result, Ontario established the Milk Control Board in 1934.[44]

The Milk Control Board had the power to oversee the "producing, supplying, processing, handling, distributing, or sale of milk."[45] As the Board could not set prices unless during arbitration for disputes, it set up associations that set agreements to govern prices for consumers and

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[40] "Further Develop Fluid Milk Sales: If Absolute Safety Guaranteed—Health Official Addresses Veterinarians."
[41] "Urges Milk Inspection in Every Municipality."
[42] Ebejer, ""Milking" the Consumer?," 23; Guy. G. Stevens, "Why is Milk Safe for Babies," *The Toronto Daily Star*, July 17, 1936, condensed by *Reader's Digest* from *The Forum*. https://www.proquest.com/hnptorontostar/newspapers/page-4/docview/1433810460/sem-2?accountid=15182.
[43] "Certified Milk," *The Toronto Daily Star*, April 1, 1927. https://www.proquest.com/hnptorontostar/newspapers/page-6/docview/1432004560/sem-2?accountid=15182.
[44] Ebejer, ""Milking" the Consumer?," 24–25.
[45] "Milk Control Act" in Dalton C. Wells, *Report of the Ontario Royal Commission on Milk 1947* (Toronto: Baptist Johnson, 1947), Appendix 4, 24. https://archive.org/details/reportofontmilk00onta/page/n5/mode/2up.

producers.[46] The medical community and consumers in Ontario had advocated for pasteurization for nearly two decades before the provincial government amended the *Public Health Act* in 1938.[47] Met with strong opposition and praise, pasteurization remained contentious among a "vocal rural lobby" that "defended the virtues of fresh milk with an almost religious fervour," despite 85 to 90 percent of milk consumption coming from pasteurized milk and fewer than 100,000 people consuming raw milk in 1937.[48]

The medical community praised pasteurization, which became mandatory in 1938 in Ontario, as an effective method for preventing the transmission of infectious diseases.[49] Despite several historical accounts of milk prices and the development of milk production, few studies look at the role of veterinarians.[50] Carla Hustak's research examines how historians, who emphasized the rise of "scientific motherhood," often overlooked the significance of cows in discussions related to breastfeeding.[51] According to historian Peter Atkins, "scientists, public health reformers, politicians, physicians, and farmers assessed and intervened in the composition of milk."[52] He argues, however, that "we may need to revise our human-centered narrative and see the cows themselves as experts."[53] By seeing cows as experts themselves, historian Peter Atkins, argues for the observation of cow's inherent ability to, for example, consume enough food and seek an appropriate

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[46] Ontario Department of Agriculture, "Report of the Minister of Agriculture Province of Ontario for the year ending March 31, 1936," The Legislative Assembly of Ontario Sessional Paper No. 21, 1937 (Toronto: T. E. Bowman, 1936), 118, in Ebejer, ""Milking" the Consumer?," 25–26.
[47] Ontario Department of Agriculture, *Sessional Paper No. 21*, 1940, 115, in Ebejer, ""Milking" the Consumer?," 37.
[48] John T. Saywell, ""Just call me Mitch": The Life of Mitchell F. Hepburn" (Toronto: University of Toronto Press, 1991), 374.
[49] C. A. V. Barker and Margaret Evans, *Century One: A History of the Ontario Veterinary Association, 1874–1974* (Guelph: Distributed by the Authors, 1976), 169.
[50] See Lisa Cox's dissertation, "Lesion Milkshakes, Markets and Science: Bovine Tuberculosis Policy in Canada," PhD Diss, University of Guelph, 2007.
[51] Carla Hustak, "Got Milk? Dirty Cows, Unfit Mothers, and Infant Mortality, 1880–1940," in *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, eds. Joanna Dean, Darcy Ingram, and Christabelle Sethna (Calgary: University of Calgary Press, 2017), 189–218.
[52] Peter Atkins, *Liquid Materialities: A History of Milk, Science, and the Law* (Burlington, VT: Ashgate, 2010), 113, in Hustak, "Got Milk? Dirty Cows, Unfit Mothers, and Infant Mortality, 1880–1940," 191.
[53] Atkins, *Liquid Materialities*, 113.

environment (e.g., shelter during the cold or rain.) By examining a cow's actions and behaviours, Peter Atkins argues we learn more about animal health from the animals themselves. Nevertheless, the anthropocentric perspective on animal disease was central to veterinary research, the economic drivers that steered veterinary medicine, and the development of new husbandry practices during the industrialization of livestock agriculture.

In 1923, Dr. R. Gwatkin, a renowned professor of bacteriology and milk hygiene, was responsible for half of the experimental reports included in OVC's annual reports to the Minister of Agriculture. Gwatkin was at OVC from 1919 until 1928, after which he worked for the Ontario Research Foundation. Gwatkin's "painstaking, methodical routines of testing and research … yielded technical papers that stood the test of time" and "carried the social and professional connections of the College to the outside world," argued F. E. Gattinger, registrar and librarian at OVC in the 1950s and 1960s.[54] Seven of these experiments focused on a new disease related to nutrition for cattle, while others focused on pneumonia in calves and piglets, strongylus controtus infection in lambs, necrotic stomatitis in suckling pigs, and nasal catarrh in fowl.[55] Half of the experiments were conducted by Gwatkin, with a focus on examining milk, cattle diseases, and avian illnesses.[56] Cattle accounted for half of livestock experiments, and two and a half times more in Gwatkin's experiments alone. In 1923, this imbalance reflected an emphasis on methods to diagnose, treat, and prevent diseases in cattle that would ensure healthier milk products for consumers in Ontario. However, to solve the livestock health challenges faced by farmers, in the

[54] Gattinger, *A Century of Challenge*, 97.
[55] McGilvray, "Report of the Ontario Veterinary College, 1923," 21–37.
[56] In 1923, tests for cattle diseases included the agglutination test for infectious abortion, the modification of the complement fixation test for infectious abortion, the agglutination curve for the diagnosis of abortion diseases, the abortin test to differentiate between infected and immune animals, and a test of cultures other than bacterium abortus agglutinated by anti-bacterium abortus serum. Measures for avian diseases included roup and canker experiments and a chicken-pox vaccination experiment. McGilvray, "Report of the Ontario Veterinary College, 1923," 38–60.

following year, OVC began conducting more experiments and courses and disseminating more information on veterinary advancements related to the expansion of the poultry industry.

Principal McGilvray outlined that OVC would aim to establish several different outreach initiatives in 1924.[57] The list of ten items reflects the livestock health concerns of farmers who regularly approached OVC for advice, with the majority related to poultry or fowls and three to cattle—highlighting how the poultry industry had expanded following the First World War, with a commensurate increase in poultry diseases.

In tandem with increased industrialization of farms was the overall increase in consumption of poultry by humans, especially those who lived in urban environments (see Table III). Initial investigations into chicken cholera in 1895 met with "ridicule" by fellow veterinarians, who viewed the "insignificance of a hen in relation to the worth of a horse."[58] However, growing interest in genetic experiments of poultry at experimental farms across Canada in the early twentieth century helped the poultry industry gain traction.[59] At OVA's annual meeting in 1921, veterinarians from the Health of Animals Branch in Ottawa and the Central Canada Veterinary Association spoke about the increasing economic significance of poultry in Canada[60] and claimed that the total value of poultry in Canada was over $38,000,000 and egg production was $90,000,000.[61] Though the 1921 Census, which was published in 1925, attributed less value to the industry than veterinary officials had, it is clear that Ontario, as home to OVC, made up 39 percent of Canada's overall poultry industry and 40 percent of egg production.[62]

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[57] McGilvray, "Report of the Ontario Veterinary College, 1923," 14.
[58] Barker and Evans, *Century One*, 159.
[59] Derry, *Art and Science in Breeding*, 81–96.
[60] Barker and Evans, *Century One*, 159.
[61] A. B. Wickware, Pathologist for the Health of Animal Branch, Ottawa, OVA Annual Meeting, 1921, in Barker and Evans, *Century One*, 159.
[62] In the 1921 census, Ontario contributed $10,270,891 of Canada's $26,588,422 to the value of the poultry industry (39 percent) and its egg production accounted for $26,106,524 of Canada's $65,293,509 (40 percent). Numbers varied from claims made at the OVA meeting. Statistics Canada, Sixth Census of Canada, 1921, 56, 692, and 709.

Like the production of milk, agricultural mechanization and the standardization of production in chickens increased throughout the early twentieth century. In response, institutional veterinarians ramped up the number of studies on poultry to support professional veterinarians and the ability of inspectors to oversee the health of livestock. Though veterinarians were not regulated nationally, federal and provincial veterinarians worked with OVC to develop standardized knowledge and practices that met their common goal for healthy livestock.[63] For example, as early as the 1890s, the federal government funded refrigeration warehouses to extend the length of perishable produce, such as eggs.[64]

Inspectors were trained at OVC or other similar colleges to prevent the spread of disease through the sale of poultry and poultry products to Canadians. Within the profession, veterinarians were kept up-to-date with recent advances in veterinary science through conferences and special publications. OVC's special bulletin on poultry diseases, published in 1924, was an attempt to help inspectors better understand poultry diseases in increasingly industrialized environments.[65] In 1924, Alberta, for example, employed twenty-six egg inspectors, including a chief egg inspector. These inspectors sorted egg quality first by separating eggs according to "fresh" or "preserved" and then graded their quality.[66] Inspectors were also expected to identify and prevent the spread of new diseases.

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[63] Canada. *House of Commons, Parliamentary Debates*, "Canadian Hansard," 13th Parliament, 2nd Session, March 3, 1919 (Walter Davy Cowan). https://lipad.ca/full/permalink/517190/; Canada. *House of Commons, Parliamentary Debates*, "Canadian Hansard," 17th Parliament, 4th Session, March 31, 1933 (John Arthur Bradette). https://lipad.ca/full/permalink/994836/.

[64] Derry, *Art and Science in Breeding*, 97.

[65] In addition to a new publication on infectious abortion in cattle. Though experimental work on blackhead, parasites, and "deficiency conditions," among others, took place, only experiments on avian diphtheria (chicken pox), contagious nasal catarrh in fowl (roup), vent gleet (cloacitic), edema of the wattles, bacillary white and Salmonella pullora infection in adult fowls, and fowl cholera gleaned enough sufficient evidence to provide information on effective diagnoses and treatments, and, therefore, permitted their inclusion in the annual report for 1924. McGilvray, "Report of the Ontario Veterinary College, 1924," 53.

[66] Motherwell, Minister of Agriculture, answered questions from William Thomas Lucas of the United Farmers of Alberta and Donald Sutherland, a Conservative member. Canada. *House of Commons, Parliamentary Debates*, "Canadian Hansard," 14th Parliament, 4th Session, March 11, 1925 (William Richard Motherwell, William Thomas Lucas, and

Funding by government in the 1920s reflected a bias toward supporting breeding efforts at agricultural experimental stations to help poultry farmers develop "good strains for distribution."[67] But these efforts did not consider the "economic value" of chickens to farmers given their limited focus on productivity and more on heredity through "traditional craft-breeding practices and experimental Mendelism."[68] OVC's efforts focused on controlling and preventing disease outbreaks in increasingly larger flocks of chickens in shared environments in the 1920s, the expansion of hatcheries across Ontario in the late 1930s, and the promotion of preferred chicken breeding methods in the 1940s.[69] According to Barker and Evans, OVA regularly called on Gwatkin as the foremost expert on poultry diseases.[70] For example, at OVC's annual meeting in 1923, he spoke about his experimental work in poultry diseases, particularly salmonella pullorum infection, and stressed the importance of "sanitary surroundings."[71] Gwatkin's research into poultry diseases had led to the publication of a bulletin in 1924, whose conclusions ultimately challenged farmers to expand and industrialize their farms. Gwatkin brought 300 infected chickens to be examined at OVC and supervised 1,500 cases off-site.[72] As a consequence of this extensive research and in recognition that poultry farming was becoming industrialized, OVC leadership decided to release and widely circulate a special bulletin about the drastic effect that the spread of these diseases could have. The 1924 report gave veterinarians, state officials, and farmers information on how to prevent and control disease outbreaks. Gwatkin's academic pursuits and research interests in bacteriology

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Donald Sutherland). https://lipad.ca/full/1925/03/11/2/#731901; https://lipad.ca/full/permalink/731902/; https://lipad.ca/full/permalink/731904/.

[67] Derry, *Art and Science in Breeding*, 85–86.

[68] Mendelism is a scientific principle based on laws of heredity developed by Gregor Mendel, an Austrian botanist. His laws of inheritance explain how genetic traits are passed down from one generation to the next through the interaction of dominant and recessive genes. "Mendelian inheritance," *The Britannica Dictionary*. https://www.britannica.com/science/Mendelian-inheritance; Derry, *Art and Science in Breeding*, 85–86.

[69] Derry, *Art and Science in Breeding*, 144–145.

[70] Barker and Evans, *Century One*, 159.

[71] Barker and Evans, *Century One*, 160.

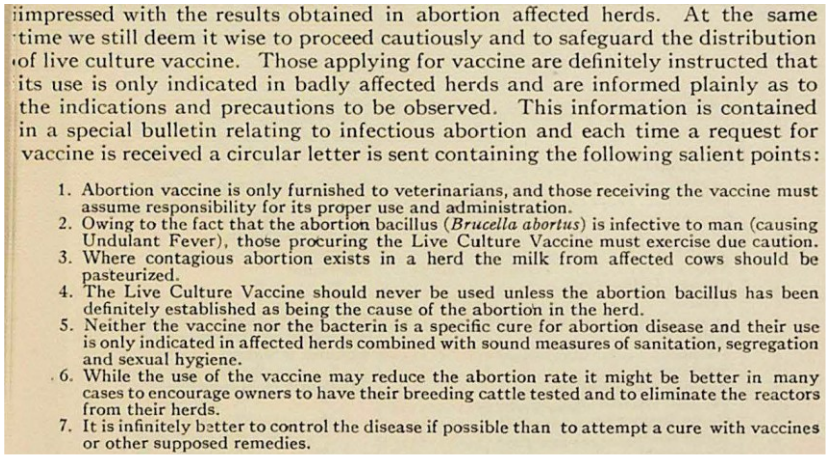
[72] McGilvray, "Report of the Ontario Veterinary College, 1924," 53.

reflected the challenges that Ontario farm communities faced at the time—challenges that hindered the production of healthy poultry and milk.

Motivated by economic demands for healthy livestock and food products, OVC continued to produce special bulletins on common livestock health challenges, such as parasites in sheep and swine, and problems related to infectious and contagious abortion, including its cause, diagnosis, treatment, and prevention.[73] Though OVC avoided encouraging farmers to practise vaccination over concerns about providing indiscriminate access to a live culture—limiting its distribution to only qualified veterinarians—the demand for "these products … steadily continued."[74] Precautions and instructions for using the vaccine in only "badly affected herds" were distributed to those applying for a supply of the vaccine (see Figure 5.1). However, OVC's Department of Applied Pathology republished these instructions in OVC's 1928 annual report to stress the significance of using live cultures for vaccines and for qualified veterinarians to use the vaccine as a last resort in large herds where the disease was established.[75]

[73] C. D. McGilvray, "Report of the Ontario Veterinary College, 1928," Toronto: The Ontario Department of Agriculture, 1929, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 4.
[74] McGilvray, "Report of the Ontario Veterinary College, 1928," 5.
[75] McGilvray, "Report of the Ontario Veterinary College, 1928," 5.

Figure 5.1: Instructions posted in a special bulletin and sent to veterinarians who applied for a supply of a live culture vaccine for contagious abortion in cattle



impressed with the results obtained in abortion affected herds. At the same time we still deem it wise to proceed cautiously and to safeguard the distribution of live culture vaccine. Those applying for vaccine are definitely instructed that its use is only indicated in badly affected herds and are informed plainly as to the indications and precautions to be observed. This information is contained in a special bulletin relating to infectious abortion and each time a request for vaccine is received a circular letter is sent containing the following salient points:

1. Abortion vaccine is only furnished to veterinarians, and those receiving the vaccine must assume responsibility for its proper use and administration.
2. Owing to the fact that the abortion bacillus (*Brucella abortus*) is infective to man (causing Undulant Fever), those procuring the Live Culture Vaccine must exercise due caution.
3. Where contagious abortion exists in a herd the milk from affected cows should be pasteurized.
4. The Live Culture Vaccine should never be used unless the abortion bacillus has been definitely established as being the cause of the abortion in the herd.
5. Neither the vaccine nor the bacterin is a specific cure for abortion disease and their use is only indicated in affected herds combined with sound measures of sanitation, segregation and sexual hygiene.
6. While the use of the vaccine may reduce the abortion rate it might be better in many cases to encourage owners to have their breeding cattle tested and to eliminate the reactors from their herds.
7. It is infinitely better to control the disease if possible than to attempt a cure with vaccines or other supposed remedies.

Source: McGilvray, "Report of the Ontario Veterinary College, 1928," 5.

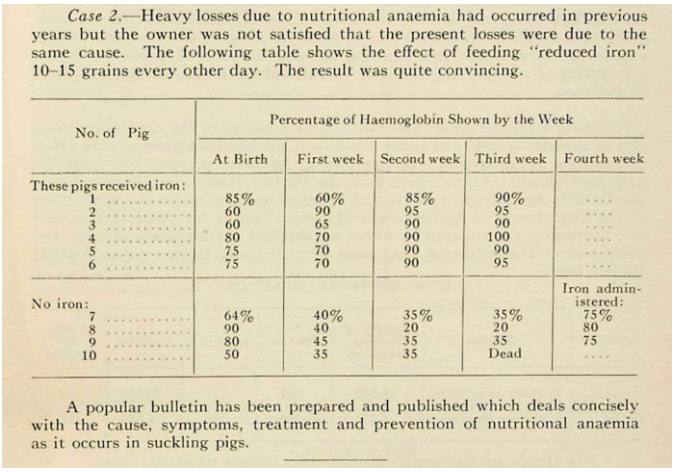
In the 1930s, OVC bulletins began addressing the rise in ailments affecting pigs due to the expansion of the swine industry. A 1931 bulletin suggested using iron reductions to prevent, treat, and decrease mortality in suckling pigs suffering from anemia.[76] The bulletin outlined the causes and symptoms of anemia, citing two case studies in experiments by Dr. F. W. Scholfield, professor of pathology, parasitology, and bacteriology at OVC from 1912 to 1955.[77] In the first case study, Schofield's team monitored a farmer's 200 brood sows where the loss of piglets was becoming a cause for concern. From March to September 1931, 367 piglets had died. Working with the farmer, the team administered iron to some piglets and left others untreated. The benefits of iron soon became apparent, and "salts of iron" were given to all piglets, a method that allowed for accurate

[76] C. D. McGilvray, "Report of the Ontario Veterinary College, 1931," Toronto: The Ontario Department of Agriculture, 1932, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 5.

[77] Schofield left OVC for four years (1916–1920) to pursue work as a Christian missionary in Korea. He gave lectures in Korean and taught at medical school during the Japanese occupation. He continued advocating for Korean independence throughout his life and returned to continue his work in Korea after retiring from OVC. C. W. Wilkinson, "Dr. Frank W. Schofield: Veterinarian Extraordinaire," *The Canadian Veterinary Journal* 49, no. 3 (2008): 290–291; "Department History Dr. Frank Schofield," *Pathobiology, Ontario Veterinary College, University of Guelph,* September 25, 2009. https://web.archive.org/web/20090925181747/http://www.ovc.uoguelph.ca/path/schofield/; K. H Sihn, ""The 34th National Representative," Dr. Frank W. Schofield (1889–1970)," *Yonsei Medical Journal* 60, no. 4 (2019): 315–318; B. Legault and J. F. Prescott, ""The arch agitator": Dr. Frank W. Schofield and the Korean independence movement," *The Canadian Veterinary Journal* 50, no. 8 (2009): 865–872.

dosing of "large numbers of pigs … in a short period of time." Schofield argued that "reduced iron" was easier to administer than "salts of iron" since "The extremely fine particles of iron [became] attached to the tongue and lips so that there [was] little possibility of the medicine being rejected or trickling from the mouth as [was] the case when solutions of iron [were] used."[78] In the next case, the team also conducted hemoglobin tests to detect the presence of anemia. OVC's second case study used a chart to note the nutritional advantages of "reduced iron" to pigs using hemoglobin tests (Figure 5.2),[79] with the benefits of feeding piglets ten to fifteen grains of "reduced iron" every other day."[80] The publication of multiple case studies with both qualitative and quantitative analyses helped OVC advance the benefits of veterinary science in reducing mortality rates in pigs to both veterinarians and farmers during the expansion of the swine industry.

Figure 5.2: Chart from second case study on anemia in piglets and the advantages of administering iron in 1931



Case 2.—Heavy losses due to nutritional anaemia had occurred in previous years but the owner was not satisfied that the present losses were due to the same cause. The following table shows the effect of feeding "reduced iron" 10–15 grains every other day. The result was quite convincing.

No. of Pig	Percentage of Haemoglobin Shown by the Week				
	At Birth	First week	Second week	Third week	Fourth week
These pigs received iron:					
1	85%	60%	85%	90%	....
2	60	90	95	95	....
3	60	65	90	90	....
4	80	70	90	100	....
5	75	70	90	90	....
6	75	70	90	95	....
No iron:					Iron administered:
7	64%	40%	35%	35%	75%
8	90	40	20	20	80
9	80	45	35	35	75
10	50	35	35	Dead	....

A popular bulletin has been prepared and published which deals concisely with the cause, symptoms, treatment and prevention of nutritional anaemia as it occurs in suckling pigs.

Source: Schofield, "Anemia in Suckling Pigs," in McGilvray, "Report of the Ontario Veterinary College, 1931," 51.

[78] F. W. Schofield, "Anemia in Suckling Pigs," in C. D. McGilvray, "Report of the Ontario Veterinary College, 1931," Toronto: The Ontario Department of Agriculture, 1932, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 50.
[79] Schofield, "Anemia in Suckling Pigs," in McGilvray, "Report of the Ontario Veterinary College, 1931," 51.
[80] Schofield, "Anemia in Suckling Pigs," in McGilvray, "Report of the Ontario Veterinary College, 1931," 51.

Unlike the pressure placed on veterinarians and veterinary institutions by farmers and governments to deliver veterinary care that addressed new challenges posed by industrialization, small animal practices faced pressure from animal welfare advocates, companion animal owners, and public health officials. OVC first began to offer clinics on small animal veterinary medicine in 1912, a move that was instrumental in eventually asserting "its right to a place on the curriculum."[81] But this evolution was not without its detractors. McGilvray, OVC's principal from 1918–1945, was a vehement opponent of companion animal practices, a view he expressed to the Minister of Agriculture:

> To be quite frank, I am not a dog enthusiast, … I realize that dogs are gaining in public favour… but too many members of the veterinary profession at the present time are turning away from livestock practice to small animal practice owing to the fact that the latter is more remunerative. … I do not wish to create the impression that the OVC is likewise inclined.[82]

McGilvray used his position as principal to disseminate his views at institutional and professional gatherings, where he referred to small animal practices as "the pooch and pussy business," according to F. E. Gattinger, OVC's registrar and librarian from 1952–1962.[83] Eventually, McGilvray bowed to the pressure and reluctantly expanded into this area. In 1928, he offered a part-time appointment to Frank J. Cote, Veterinary Public Health Officer in Guelph, to give one weekly clinic on "Small Animal Diseases and Surgery."[84]

McGilvray's sentiments at the time aligned with those of the Minister of Agriculture. In 1938, Minister P. M. Dewan wrote in a Guelph newspaper, "Veterinarians should keep out of the puppy and kitten business and my sympathy is with those who devote the knowledge of their

[81] Gattinger, *A Century of Challenge*, 70–71.
[82] C. D. McGilvray, letter to Hon. John S. Martin, Guelph, October 28, 1927, in Gattinger, *A Century of Challenge*, 106.
[83] Gattinger, *A Century of Challenge*, 106.
[84] Gattinger, *A Century of Challenge*, 106.

profession to something more important … to assisting farmers and the livestock industry."[85] Dewan's and by extension the provincial government's goals and that of OVC's leaders believed that economic growth—ideal for profit-driven industrial expansion—superseded local urban concerns. This approach viewed farmers as manufacturers who were in the business of producing food for a changing Canadian society. This view was promoted in popular literature, by universities, and in Canadian society as a whole.[86]

During this period, the Society for the Prevention of Cruelty to Animals (SPCA) in Toronto noticed a rise in health problems with dogs (such as rabies) and the viciousness of police dogs, especially in urban communities.[87] Many historians have written on the roots of the animal welfare movement in Britain.[88] However, substantially less has been written on the animal welfare

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[85] *Guelph Daily Mercury,* November 10, 1938, in Gattinger, *A Century of Challenge*, 106.

[86] Mark Finlay, "Hogs, Antibiotics and the Industrial Environments of Postwar Agriculture," in *Industrializing Organisms: Introducing Evolutionary History*, eds. Susan Schrepfer and Phillip Scranton (New York: Routledge, 2003), 237–260.

[87] The following are examples of articles from *The Toronto Daily Star*, which also featured a regular column entitled "Pets." Royal S. Copeland, M.D., "Your Health, Fight Hydrophobia by Immunizing Dogs: Dangers Lessened Through Treating Animals in Centres of Population," *The Toronto Daily Star*, February 28, 1927. https://www.proquest.com/hnptorontostar/docview/1436995184/BD971CDF88E481DPQ/77?accountid=15182&sourcetype=Newspapers#; "Police Chief Orders Dogs from Streets, Three Children are Bitten in Chatham—Cats not Affected," *The Toronto Daily Star*, August 15, 1928. https://www.proquest.com/hnptorontostar/docview/1434621852/BD971CDF88E481DPQ/28?accountid=15182&sourcetype=Newspapers; A. D. Kean, "Dogs Have Fright Malady Seizures Occur Suddenly: Canine Hysteria is Discussed by Dr. Campbell Before Veterinarians," *The Toronto Daily Star*, February 13, 1932. https://www.proquest.com/hnptorontostar/docview/1433384802/BD971CDF88E481DPQ/101?sourcetype=Newspapers; "Police Dogs Perilous Loose on Streets," *The Toronto Daily Star*, August 3, 1932. https://www.proquest.com/hnptorontostar/docview/1433399554/BD971CDF88E481DPQ/17?accountid=15182&sourcetype=Newspapers; "May Put Check on Police Dogs," *The Toronto Daily Star*, August 4, 1932. https://www.proquest.com/hnptorontostar/docview/1433399524/BD971CDF88E481DPQ/27?accountid=15182&sourcetype=Newspapers; "Poisoner of Pets Alarms Owners North of City, Already Dozens of Victims From Unknown Vandals' Campaign, Picks Good Stock, Three Costly Animals on One Street Attacked without Apparent Reason," *The Toronto Daily Star*, May 16, 1935. https://www.proquest.com/hnptorontostar/pagelevelimagepdf/1434660296/Record/BD971CDF88E481DPQ/14?t:lb=t&accountid=15182&sourcetype=Newspapers; "How to Kill Dogs in Much Dispute," *The Toronto Daily Star*, March 9, 1938. https://www.proquest.com/hnptorontostar/docview/1433970089/BD971CDF88E481DPQ/47?accountid=15182&sourcetype=Newspapers; "Only a Mutt, But, [Toronto Humane Society]," *The Toronto Daily Star*, April 8, 1938, https://www.proquest.com/hnptorontostar/pagelevelimagepdf/1434143351/Record/BD971CDF88E481DPQ/55?t:lb=t&accountid=15182&sourcetype=Newspapers.

[88] See, Richard P. Haynes, *Animal Welfare: Competing Conceptions and Their Ethical Implications* (New York: Springer, 2008) for a discussion of the roles played by "science" and "sentiment" in developing animal welfare ethics and strategies in the United States. See, A. W. H. Bates, *Anti-Vivisection and the Profession of Medicine in Britain: A Social History* (London: Palgrave Macmillan, 2017), for discussions about how medical professionals opposed vivisection based on the "compassionate ethos" of the profession. As Abigail Woods argues, farm animal welfare emerged much later, beginning

movement in Canada.[89] Canada adopted Britain's approach to animal welfare societies, similar to Canada's adoption of institutional veterinary standards. Anthropocentric motives drove the emergence and development of veterinary medicine as a profession in Canada. Not only economic motives, but animal welfare played a secondary role. Newspapers in urban centres were publicizing the growing concerns and demand for veterinarians who could vaccinate or humanely kill unhealthy or vicious animals in cities. Yet, McGilvray—supported by the veterinary profession—maintained the importance of servicing the Canadian agricultural economy and its farmers.

Connecting Farmers and OVC Through Extension Services

To fulfill the economic needs of a developing livestock industry in Ontario communities, OVC expanded its research and investigational work in 1923. Principal McGilvray outlined that the college had received letters from veterinary surgeons and livestock owners, who expressed their appreciation for the assistance they received from OVC's research on specific cases. However, in 1931, OVC acknowledged that "ante-mortem and post-mortem examinations of poultry" took up a "considerable amount of time" with "unfortunately very little opportunity" to conduct the investigational research from which the poultry industry would "benefit." Several investigations began that year, but "had to be abandoned owing to the greatly increased amount of routine

in 1964 in Britain. Abigail Woods, "From Cruelty to Welfare: The Emergence of Farm Animal Welfare in Britain, 1964–71," *Endeavour*, 36, no. 1 (2012): 14–22.

[89] Darcy Ingram argues that the link between women, animal welfare, and radicalism had already taken hold in Britain and the United States. By the time the movement arrived in Canada, these connections to first-wave feminism were already established. Ingram also notes that the animal welfare movement drew on the language of Duncan McEachran, founder of the Montréal Veterinary School, who discussed animal intelligence in ways that elevated the status of animals and challenged the status of humans. Duncan McEachran, "Why Every Student of Veterinary Medicine Should Study Psychology," Can Animals Reason? Opening Address, Society of Comparative Psychology (Montréal: Gazette Printing Company by Request of the Society for Prevention of Cruelty to Animals, Montréal, 1888) in Darcy Ingram, "Wild Things: Taming Canada's Animal Welfare Movement," in *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, eds. Christabelle Sethna, Joanna Dean, and Darcy Ingram (Calgary: University of Calgary Press, 2017), 87–114. Carla Hustak also makes the case for the connection between animal welfare in the context of cow's milk production, infants, and motherhood. Hustak, "Got Milk? Dirty Cows, Unfit Mothers, and Infant Mortality, 1880–1940," in *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, 189–218. Darcy Ingram, "Beastly Measures: Animal Welfare, Civil Society, and State Policy in Victorian Canada," *Journal of Canadian Studies* 47, no. 1 (2013): 221–52.

work."[90] Since its inception, OVC had received letters about the spread of disease unknown to the farmer, and as the veterinary profession grew, veterinarians trained at the college as well as community members increasingly drew upon the college's expertise. Farmers and private-practice veterinarians started to become aware of the college's growing capacity to investigate cases. Though there were years of growing pains, as OVC moved away from its urban centre (Toronto) in 1922, the college slowly developed facilities to accommodate its growing stature as an investigational facility by establishing laboratory and research capabilities in its new buildings at Guelph.

OVC's communication process reflects its evolution. Initially, in response to correspondence from concerned farmers and veterinarians about problematic disease outbreaks, the college offered advice through extension programs and special bulletins. It also advertised its diagnostic laboratory services in agricultural periodicals and newspapers. OVC indicated it would receive and examine feed, well water, milk, weeds, carcass, or blood samples and then let a farmer know if contamination or disease was present.[91] By 1924, it was undertaking outreach programs—evidence of how demands for livestock healthcare were changing.[92]

Then came another transition in the interwar period, with veterinarians shifting their focus from solutions that addressed unhealthy environments that fostered bacterial disease to solutions that addressed the body internally as an unhealthy environment.[93] This conversion, from external to internal environments, facilitated a transition to industrial farming environments. Propelled by a rise in vaccines as preventive treatments and mass diagnostic testing, this shift in thinking helped to strengthen the connection between the veterinary profession and farmers, served the needs of a

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[90] J. S. Glover, "A Review of the Routine Work in Connection with Poultry Diseases During the Past Year," in McGilvray, "Report of the Ontario Veterinary College, 1931," 53.
[91] "Information Practical and Profitable – Write for it," *The Farmer's Advocate and Home Magazine* LII, no. 1293 (July 5, 1917): 1116; Ontario Department of Agriculture, Toronto, "Veterinary Specimens: Submitting for Bacteriological Examination. How to Prepare for Testing When Animals Die Suspected of Such Dangerous Disease as Rabies, Anthrax, Blackleg, Contagious Abortion, Etc.," *The Waterdown Review* 4, no. 22 (October 6, 1921).
[92] McGilvray, "Report of the Ontario Veterinary College, 1924," 20.
[93] Langston, *Toxic Bodies*.

burgeoning livestock industry, and triggered a change in the animal–human relationship, with animals now viewed as scientific subjects. Later, in the 1940s (beyond the scope of this study), antibiotics facilitated this transition by cleansing the internal ecosystem of animal bodies, allowing animals to continue living in unhealthy external ecosystems.

OVC's Department of Pathology and Parasitology outlined that it investigated diseases affecting cattle and horses for farmers in 1924.[94] Though there was a growing emphasis on poultry then, OVC's annual report notes nine cases where provincial veterinarians sought assistance. Five of these cases involved diagnosing cattle and four cases focused on diseases and injuries affecting horses. At this time, exactly who could access these services was unclear when the department indicated that "the facilities of the department [were] always at the disposal of all who [were] entitled to its service" in their research report.[95] As I discuss later, OVC believed some treatments, including vaccines, should only be disseminated for use by institutionally trained veterinarians. Therefore, it is unclear if farmers were entitled to OVC's services in 1924 or if McGilvray only referred to institutionally trained, private-practice veterinarians and those working for the provincial and federal governments.

Finally, in 1925, OVC formally established an extension service to allow private-practice veterinarians and the public to send "specimens to the college for laboratory examination."[96] As veterinary medicine began to align more closely with scientific laboratory work, farmers and experiential experts were further precluded from practising animal healthcare on their own. Establishing extension services created an outreach program where, with the increasing number of veterinarians in rural environments, communities across the province could seek assistance from

[94] McGilvray, "Report of the Ontario Veterinary College, 1924," 34.
[95] McGilvray, "Report of the Ontario Veterinary College, 1924," 34.
[96] McGilvray, "Report of the Ontario Veterinary College, 1925," 5.

OVC. Each department maintained extension services to satisfy the demand. OVC's annual reports to the Minister of Agriculture contain information on the results of its extension services.[97]

This collaborative approach improved understanding of current animal health problems; disseminated information to governments, private-practice veterinarians, and farmers; gave students an opportunity to advance their own experiential knowledge; united veterinary researchers with those observing animals daily to advance veterinary science; and ultimately deliver better treatments and preventive measures for livestock in their care.

In addition to class lectures, laboratory, and other instructional work, according to OVC's 1925 annual report, "college staff [would] endeavour to conduct such research and investigational work as their time and opportunity permit[ted]."[98] Research focus reflected the livestock health challenges of the year, hinged on funding support, and as annual reports from 1926 onward indicate, on having adequate facilities to engage in research.[99] Although research was important to fulfilling economic demands for improved livestock health and advancing veterinary standards, OVC needed to balance efforts to advance veterinary science with the time spent instructing veterinary students in order to produce enough veterinarians to service communities across Ontario.

OVC recognized that efforts put towards research and investigational work were not only "valuable" for their "immediate results" but also for "fostering an atmosphere and incentive to the thoughtful minded, diligent, painstaking student to pursue such studies as will develop a bent of mind for research work." Doing so would fulfill a "demand and need" for researchers. Although this demand was "generally recognized," "the number of persons inclined and qualified for the purpose

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[97] McGilvray, "Report of the Ontario Veterinary College, 1925," 5.
[98] C. D. McGilvray, "Report of the Ontario Veterinary College, 1925," Toronto: The Ontario Department of Agriculture, 1926, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 4.
[99] C. D. McGilvray, "Report of the Ontario Veterinary College, 1926," Toronto: The Ontario Department of Agriculture, 1927, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 5.

[were] relatively few owing chiefly to the lack of opportunity afforded."[100] Thus, by 1926, it was evident that OVC must invest in and encourage students to gain research and experimental skills if it were to fulfill the demand for additional research staff at the college (driven by the number of inquiries from farmers and veterinary surgeons).

Throughout the interwar period, OVC examined living and dead animal specimens, feces, and blood samples submitted by farmers and private-practice veterinarians. Then, OVC reported its conclusions and recommendations to those who had submitted the inquiry. As farmers and local veterinarians increasingly relied on OVC's scientific services, these outreach programs also allowed OVC to create valuable experiential learning opportunities for students. In 1926 alone, McGilvray noted that OVC's Department of Histology and Applied Pathology had produced "upwards of two hundred sets of slides" for students to examine under microscopes in classrooms.[101] The evidence OVC collected was tied to the expansion of industrial farming—and was imperative to the profession's growth.[102]

The OVC continued receiving specimens from veterinary surgeons and farmers for laboratory examination throughout the 1920s and 1930s. By 1926, these inquiries and services were "steadily growing" and becoming formalized within industrial farming practices. OVC's outreach programs included the "routine," "periodic … microscopic examination of fox feces" to detect outbreaks of parasitic infestations before infections overwhelmed fox farms, conducting "approximately 20,000 blood serum examinations" to identify "pullorum infection causing white diarrhoea in chickens," and preparing 5,000 doses of vaccination against bovine infectious abortion, among other disease investigations, such as tuberculosis in various animal species.[103] OVC's

[100] McGilvray, "Report of the Ontario Veterinary College, 1926," 5.
[101] McGilvray, "Report of the Ontario Veterinary College, 1926," 34.
[102] McGilvray, "Report of the Ontario Veterinary College, 1926," 5.
[103] McGilvray, "Report of the Ontario Veterinary College, 1926," 6 and 34.

departments focused on teaching, preparing biological products, conducting research and investigations, and performing routine specimen examinations. This approach supported the growth of cattle, sheep, and swine farms and notably enhanced the poultry farms and fox ranches in Ontario. For example, in 1926, OVC's Department of Bacteriology generated "detailed laboratory report[s]" based on 19,507 blood serum examinations to help poultry farmers detect salmonella pullorum infections.[104] Of the samples tested, 2,751 were positive, eight were deemed "suspicious," and 275 samples were "unfit for testing." The remaining 16,473 samples tested negative.[105] OVC's periodic testing ultimately helped prevent, diagnose, and contain the spread of disease and accommodated the expansion of industrial farming practices.

OVC's focus on burgeoning livestock markets for food production was two-fold. Veterinary institutions and the profession continued to expand their authority by providing scientific outreach services that addressed concerns of farmers and the provincial and federal governments about the spread of disease in growing industries. At the same time, OVC relied on its connections with farmers and local veterinarians (a population that needed to increase) to advance veterinary medicine. OVC provided vaccines to "practicing veterinarians on request of owners desiring to have their cattle vaccinated for infectious abortion."[106] This initiative encouraged a collaborative relationship between OVC researchers, practising veterinarians, and farmers.[107] However, as this relationship grew, farmers and experiential practitioners became less independent, owing to their increasing reliance on professional veterinary services. OVC preferred distributing vaccinations to professional local veterinarians to administer on farms. By 1928, Principal McGilvray noted in OVC's annual report that "a steady stream of enquiries … relating to infectious abortion of cattle"

[104] McGilvray, "Report of the Ontario Veterinary College, 1926," 6.
[105] McGilvray, "Report of the Ontario Veterinary College, 1926," 37.
[106] McGilvray, "Report of the Ontario Veterinary College, 1926," 6 and 34.
[107] Other smaller vaccination projects for combatting diseases like avian diphtheria or parasitic infections were also developed at OVC during this period.

encouraged "a greater desire for more definite legislative measures of control."[108] Vaccine distribution is evidence of the role that each stakeholder played in overcoming livestock health challenges that threatened economic prosperity. It also illuminates how the roles of farmers, experiential experts, and professional and institutional veterinarians evolved and how these changes shaped veterinary medicine.

The distribution of these vaccines gained importance for farmers as protests over the price and purity of livestock products erupted in Ontario in the 1920s and 1930s. People protested the rise in milk costs and contested the merits of pasteurization. The establishment of the Milk Control Board by the provincial government was an attempt to mediate the divergent interests of consumers, producers, and distributors and to limit the price of milk to an affordable rate. However, this action further restricted farmers' ability to practise livestock healthcare. It also increased the cost of milk production.[109] Livestock disease became a veterinary matter due to the economic impact of an unchecked outbreak. With an increasing urban population and the development of hinterland-metropolis economic relationships, which led to food production in rural communities entering urban markets, provincial and federal governments turned their attention to standardizing and regulating livestock farming. OVC administrators, OVA members, and government officials tracked evidence of disease outbreaks by analyzing diagnostic laboratory examinations requested by farmers and private-practice veterinarians. These records supported professional veterinarians and legislators in developing policies that supported the production of healthy livestock products for consumer markets.

Providing extension services to the livestock farming sector was of the utmost importance. To increase the reliability of these collaborative laboratory tests, in 1923, 1928, and 1929, professors

[108] McGilvray, "Report of the Ontario Veterinary College, 1928," 8.
[109] Ebejer, ""Milking" the Consumer?," 20–39.

Batt, Gwatkin, and Schofield took part in sessions at OVA's annual meetings that advised veterinarians on how to procure and preserve specimens for pathological and bacteriological examination.[110] In 1927, L. Joslyn Roger, an analytical chemistry professor at the University of Toronto, further instructed veterinarians on the "kind of container in which to submit specimens for chemical examination."[111] As discussed in Chapters One and Three, the proper handling of infected livestock, environments, and materials was also paramount to protecting public health.

When reflecting on the popularity of its extension services to the Minister of Agriculture in 1927, OVC reported how "it [was] remarkable to what extent this service [was] now being availed by veterinarians and livestock owners."[112] OVC had increased its services to provide 60,000 agglutination tests to detect pullorum infections in poultry.[113] It also conducted laboratory examinations for "numerous diseased specimens" from "all classes of livestock and pet animals including horses, cattle, sheep, goats, swine, poultry, pigeons, rabbits, dogs and cats" that they "received every day."[114] This work ensured that students and faculty were adhering to what was viewed as a "worthy privilege to develop one's talents towards a wider service of professional usefulness in whatever capacity they may be required."[115]

The growth of scientific outreach initiatives paralleled an increasing demand for veterinary science researchers. In his report to the Minister of Agriculture, McGilvray sought to justify the time and resources needed to conduct this research. He recognized that numerous full-time staff were "kept busily engaged throughout the year, and in some instances [frequently worked] overtime." He also said that OVC required "help and additional facilities" if the college were to meet increasing

[110] Barker and Evans, *Century One*, 157.
[111] Barker and Evans, *Century One*, 157.
[112] McGilvray, "Report of the Ontario Veterinary College, 1928," 4.
[113] McGilvray, "Report of the Ontario Veterinary College, 1928," 5.
[114] McGilvray, "Report of the Ontario Veterinary College, 1928," 5.
[115] McGilvray, "Report of the Ontario Veterinary College, 1927," 3.

demands for research and investigational work that would prevent and limit the spread of livestock diseases.[116] McGilvray notes that few understood the demands associated with conducting proper research experiments, including the "amount of time, special detail, and greater facilities than the staff of an educational institution may have at their disposal."[117] The increasing demand for research work grew OVC's influence on combatting common and critical ailments that posed a risk to Canada's economic growth and the industrialization of livestock farming. In doing so, McGilvray asserted the college's significance through the need to train veterinary students for research work—thereby pointing to a role that went beyond that of the traditional local veterinarian.

In 1929, this desire to train more students in experimental research and hire people to conduct this research at more facilities in Guelph shows an increasing desire to associate the college with "scientific research and follow knowledge beyond the present realms of human thought," according to McGilvray's own assessment.[118] This focus, however, served to restrict a farmer's ability to practise livestock healthcare. In the report, McGilvray described a transition to preventive veterinary medicine where people no longer solely desired a cure, but preventive methods for limiting the spread of disease and "a new set of formulas that [would] guarantee against sickness" rather than "reducing complex ideas into simple formulas available for general use" and a "definite cure formula."[119] McGilvray argues that "in some respects unlearning the public is even more difficult than learning them in order that they may readjust [their understanding of livestock health]." OVC leadership's frustration with educating livestock owners who valued experiential knowledge about adopting both scientific methods and public health regulations was apparent.

[116] McGilvray, "Report of the Ontario Veterinary College, 1927," 5.
[117] McGilvray, "Report of the Ontario Veterinary College, 1927," 5.
[118] McGilvray, "Report of the Ontario Veterinary College, 1928," 6.
[119] McGilvray, "Report of the Ontario Veterinary College, 1928," 6.

The gap between experiential and institutional knowledge only widened as veterinary science advanced. McGilvray further outlined how theories changed from Hippocrates' humoral theory of disease, which saw "potions of herbs and drugs to ward off sickness," to Virchow's mechanistic idea of the "size, shape, and arrangement of cells [that] determine[d] the nature of the different organs and tissues," which laid the "foundation for anatomy, histology, physiology, and pathology" and "rational basis." This new school of thought led to an understanding of "favourable natural reactions" and how disease represented the "unfavourable reactions of the body structures brought about by deleterious stimulation of the body cells." Finally, McGilvray argued, Pasteur's discovery of germ theory gave rise to the new field of bacteriological science.[120] He outlined two schools of opposing thought: "champions of cellular pathology [and those who] resisted the central idea of bacterial disease." The rise of bacteriology and understanding these biological laws "paved the way for vaccinal therapy and antitoxin treatments."[121] In other words, preventive treatments meant that farmers could focus on combatting disease internally within the body and less on external environmental conditions that challenged the expansion of industrial farming in over-crowded environments. This approach eventually led to the advent of antibiotics in the 1940s.[122] In his 1929 report, McGilvray proclaimed, "Great is the accumulation of wisdom, but great also is the wreckage

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[120] McGilvray, "Report of the Ontario Veterinary College, 1928," 6–7.

[121] McGilvray, "Report of the Ontario Veterinary College, 1928," 7.

[122] The dynamic interrelationship between farmers, scientists, and industrialists was evident in the development of medicines that sustained industrial growth within livestock farming. By providing veterinary services to farmers that helped them produce healthy milk, veterinarians helped maintain the health of livestock that society relied upon. The discovery of antibiotic residues in milk after the Second World War sparked new definitions of pure milk that lacked both "bacterial hazards" and "synthetic residues." Kendra Howard-Smith, "Antibiotics and Agricultural Change: Purifying Milk and Protecting Health in the Postwar Era," *Agricultural History* 84, no. 3, (2010): 345–346. Like human medicine, the development of antibiotics transitioned medical approaches to bacterial diseases from solutions that address unhealthy environments that fostered bacterial disease to solutions that address the body internally as an unhealthy environment. Langston, *Toxic Bodies*. Antibiotics accommodated a shift in thinking from external to internal environments, which in the context of industrial farming allowed veterinarians to overcome the ecological conditions that fostered bacterial disease in overcrowded environments by cleansing the internal ecosystem of animal bodies so they could continue to be raised in unhealthy external ecosystems while also increasing feed-conversion efficiency. This transformation spurred the development of industrial livestock farming. Derry, *Art and Science in Breeding*; William Boyd, "Making Meat: Science, Technology, and American Poultry Production," *Technology and Culture* 42, no. 4 (October 2001): 631–64.

of beliefs and promises. The great difficulty at times is to find out the exact truth and reject the false."[123] To achieve this, OVC advocated to expand the college's examination and laboratory work, which established the college as a leader in research and investigation, a role it continues to fulfill today.

By 1931, undeterred by the Great Depression, OVC increased its public extension services to include surgeries, laboratory examinations of blood samples, preparation of antigens, testing fluids, and vaccines. In commending these services, McGilvray noted this work had become "routine" and was essential. As I note earlier in this chapter, there was a growing demand for OVC's services in the 1930s, particularly around poultry diseases, parasitic diseases in swine and sheep, hemorrhagic septicemia in cattle, and for detecting, treating, and preventing contagious abortion in cattle.[124] Farmers were relying more and more on OVC's veterinarians and facilities.

McGilvray's claim that the "need and value of veterinary education and training as a public service [was] greater [in 1931] than ever before" highlights the importance of standardizing veterinary medicine.[125] McGilvray attributed the growing recognition of the value of veterinary education and training to two key pivotal factors behind Canada's "well-being and prosperity":

> First. —The welfare of the public health [was] being safeguarded through veterinary science by the control of diseases communicable from animals to man with fatal effect.
>
> Second. —The prosperity of live stock development and allied interests is being safeguarded. It is an established fact that the human race depends largely on farm animals for food and clothing. If any of the so-called serious animal plagues should gain a foothold here one can readily appreciate the damage that would accrue to both producers and consumers and the losses to allied interests through the dislocation of live stock traffic and marketing, to trade and

[123] McGilvray, "Report of the Ontario Veterinary College, 1931," 6.
[124] McGilvray, "Report of the Ontario Veterinary College, 1931," 6.
[125] McGilvray, "Report of the Ontario Veterinary College, 1931," 7.

> commerce in general, and the large expenditure of public funds required to suppress such diseases as prevailed.[126]

Both of the roles described by McGilvray are based on anthropocentric values. The first role was as a defender of human public health in which the management of animal health was a function of protecting people by controlling and eradicating the spread of zoonotic diseases. The second role was an economic role in ensuring the continued productivity of livestock animals for the material benefit of people. Interestingly, neither of the roles envisioned by McGilvray focused on animal welfare movements of the time. Instead, McGilvray's two-fold approach facilitated connections between veterinary services and public health officials, farmers, and processing facilities, making the profession a vital part of society.

OVC's emerging position as a leader in veterinarian science, research, and education mirrors the authority that was increasingly being afforded to veterinarians elsewhere in the world, despite the effect of the Great Depression and in spite of some state schools in the U.S. losing funding or having a "dubious" reputation due to a lack of facilities or faculty.[127] Though OVC's enrolment decreased during the First World War and the years following its move to Guelph, OVC eventually grew its enrolment numbers, standardized veterinary medicine, and cemented the veterinary profession in the fabric of urban and rural Ontario.

OVC once again encouraged students to develop their research and investigational skills by including short courses for graduate practitioners in 1932. Essentially, OVC was filling a gap by offering an "opportunity to keep abreast of the times and be of greater usefulness to those depending on their services." A "special qualifying examination" was also "arranged by the Civil Service Commission for the appointment of part-time veterinary inspectors under the Health of

[126] McGilvray, "Report of the Ontario Veterinary College, 1931," 7.
[127] Cheville, *Pioneer Scientists and the Great Animal Plagues*, 116–117.

Animals Branch" for those who had completed the course.[128] This work allowed OVC to adapt and advance understandings of veterinary science while educating students and continuing efforts to develop the research skills of institutionally trained veterinarians. The continuing publication of recent research and advancements in special bulletins also kept farmers and the public informed about livestock health issues and advances in veterinary science, and were an educational vehicle for OVC graduates and practising veterinarians.

In addition to building a relationship with farmers, professional and institutional veterinarians also came to rely on farmers' observations (and local expertise). From 1931–1933, three OVC staff, R. A. McIntosh, professor of disease in cattle, obstetrics, and therapeutics, G. E. Raithby from the animal husbandry department, and H. L. Fulmer from the chemistry department, struck up a committee to study mineral deficiency diseases in cattle.[129] The committee visited farms in eighteen southern Ontario counties, and published its findings in OVC's annual reports, including evidence that led it to understand that the disease "occur[ed] as a stable feeding deficiency in Ontario much more frequently than as a pasture feeding deficiency."[130] Based on farmers' observations and records, in 1931, the committee stated that it was "probab[ly]" a deficiency in phosphorus that led to the condition in Ontario.[131]

In 1932, the committee extended its study work to any "progress" that had been made. Farmers thanked the committee for its "advice and help, … which had aided them greatly."[132] Some

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128 The counties included Wellington, Grey, Bruce, Huron, Haldimand, Waterloo, Wentworth, Elgin, Northumberland, Hastings, Lennox and Addington, Grenville, Carleton, Renfrew, Lanark, Peel, Ontario, and Victoria counties. C. D. McGilvray, "Report of the Ontario Veterinary College, 1932," Toronto: The Ontario Department of Agriculture, 1933, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 4.

129 McGilvray, "Report of the Ontario Veterinary College, 1932," 3.

130 R. A. McIntosh, "Report of the Committee Making a Survey on Mineral Deficiency Diseases in Cattle," in McGilvray, "Report of the Ontario Veterinary College, 1931," 13. The committee visited Wellington, Grey, Bruce, Huron, Haldimand, Waterloo, Wentworth, Elgin, Northumberland, Hastings, Lennox and Addington, Grenville, Carleton, Renfrew, Lanark, Peel, Ontario, and Victoria counties.

131 McIntosh, "Report of the Committee Making a Survey on Mineral Deficiency Diseases in Cattle," in McGilvray, "Report of the Ontario Veterinary College, 1931," 22–23.

132 McGilvray, "Report of the Ontario Veterinary College, 1932," 5.

farms had undergone "improvement of pastures and forage crops and the direct replenishment of the deficient mineral elements by the addition of bone meal and other supplements to feed" or "phosphoric acid."[133] The committee made observations, interviewed local veterinarians, and surveyed farmers about their observations. Farmers were asked about the number of cattle on their farm, the appetite of the cattle, the amount of time before "affected animals of last year" had recovered, if they had "supplemented [their] home-grown feeds during the last winter," and if their "cattle [were] allowed out more during the last winter?"[134] In 1933, the committee conducted experiments at OVC, which involved feeding cattle hay and grains from a "known deficiency area."[135]

This feedback and exchange of knowledge not only helped to develop a relationship between institutional veterinarians, local veterinarians, and farmers, but also provided experiential knowledge the committee members may not have otherwise acquired. For example, Schofield's interest in the committee's survey work was not just in the nutritional deficiencies of cattle, but also in the "stiffness in young pigs which were fed on the 1930 grains," which farmers were reporting to the committee.[136] This local, experiential knowledge informed OVC's research work, opened up new investigative avenues, shaped institutional findings, and enhanced study results. It may have also encouraged farmers to accept and act on the committee's findings and advice. This may not have occurred in the late nineteenth century, when institutional and professional veterinarians used a top-down approach to implementing changes to livestock husbandry practices.

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[133] McGilvray, "Report of the Ontario Veterinary College, 1932," 5. For the administration of phosphoric acid, McIntosh, "Report of the Committee Making a Survey on Mineral Deficiency Diseases in Cattle," in McGilvray, "Report of the Ontario Veterinary College, 1931," 23, 24; McGilvray, "Report of the Ontario Veterinary College, 1933," 22–23.
[134] McIntosh, "Report of the Committee Making a Survey on Mineral Deficiency Diseases in Cattle," in McGilvray, "Report of the Ontario Veterinary College, 1932," 13, 13–24.
[135] McGilvray, "Report of the Ontario Veterinary College, 1933," 5–6.
[136] McIntosh, "Report of the Committee Making a Survey on Mineral Deficiency Diseases in Cattle for the Year 1932," in McGilvray, "Report of the Ontario Veterinary College, 1932," 23–24.

OVC continued to expand its research activities and efforts to serve the "commercial" interests of farmers. In 1933, it expanded its public extension services to include "Animals Clinics, Laboratory Examinations, Serological Tests, and Preparation of Vaccines." The animal clinic provided "medical and operative treatment" to 1,708 animals.[137] In the laboratory, 2,410 animals received "microscopic and bacteriological examination" and 1,910 poultry (one from each farmer who sought OVC's help) autopsies were conducted. Blood tests, which were "becoming more widely used as the best method for diagnosing certain forms of disease," were conducted on 11,392 samples from cattle and 9,887 samples from poultry. If livestock tested positive, "owners" were instructed on ways to contain the disease and dispose of carcasses effectively. [138] These instructions relayed knowledge of veterinary science directly to farmers and veterinarians who oversaw herds affected by disease. These outreach initiatives helped to standardize procedures across the province. They were also essential to the scientific methods used to understand animal health and disease. Scientists at OVC required specimens, blood samples, and livestock from farming environments as evidence in their research. The development of scientific veterinary practice necessitated engagement with local farmers and brought the profession into a closer relationship with practising farmers.

OVC also expanded its distribution of diagnostic agents. The college produced and supplied 5,875 "antigen (test fluid)" doses for B. abortus in cattle and 55,000 of the "pullorum antigen (test fluid)" to "qualified veterinarians" or "graduates" "whose herds they were supervising."[139] The public extension service also supplied "2,113 doses of killed culture vaccine" for Bang's disease and

[137] C. D. McGilvray, "Report of the Ontario Veterinary College, 1933," Toronto: The Ontario Department of Agriculture, 1934, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 7.
[138] McGilvray, "Report of the Ontario Veterinary College, 1933," 8.
[139] Serological tests most commonly diagnosed "Bang's disease (contagious abortion) in cattle" and "pullorum disease (bacillary white diarrhoea) in fowl." McGilvray, "Report of the Ontario Veterinary College, 1933," 8.

fulfilled requests for 50,000 doses of fowl pox vaccine from professional veterinarians. McGilvray noted that "increasing demand for the extension services create[d] a large amount of detail, routine work of a skilful nature, with an immense volume of correspondence, personal interviews for advice, and the preparation of tests charts and laboratory reports."[140] To cover the incurred expenses, these services required a "nominal charge," which OVC argued made it "self-sustaining" without burdening the provincial government. Similar public extension services exist at OVC today.[141] Over the twentieth century, these services have provided diagnostic information and preventive methods to help farmers maintain the health of their livestock as well as opportunities for veterinary students to learn about common health challenges experienced by industrialized farms. The reciprocal relationship between local veterinarians, OVC, and farmers helped advance local practices in line with veterinary developments while also building a profession that served the economic needs of farmers and requirements of the Canadian food industry.

By the mid-1930s, despite all efforts to provide veterinary services, farmers continued to treat their own livestock without seeking professional veterinary help. For example, in 1936, the *Toronto Daily Star* reported that farmers in Trafalgar Township "act[ed] as [their] own veterinarians to afford relief to [cattle]." Upon eating alfalfa, the cattle began to bloat within minutes and "there [was] no time to call for a veterinarian." The farmers "punctur[ed] the hide below the left hip bone," where they made an incision to release the gas. They noted the need to closely watch cattle as they turned out to pasture, and especially on hungry cows turned out to alfalfa pastures "suddenly." In 1936, dry conditions meant that the second growth of alfalfa was delayed. Therefore, farmers argued the need to wean cattle onto alfalfa slowly. One farmer conducted this surgical procedure with an

[140] McGilvray, "Report of the Ontario Veterinary College, 1933," 8.
[141] McGilvray, "Report of the Ontario Veterinary College, 1933," 7.

"ordinary jack knife" in the field.[142] Despite increased veterinary science and the authority of veterinarians, there continued to be instances where farmers valued time, money, and local observations over professional veterinary advice.

As livestock husbandry became industrialized, extension services helped OVC address new challenges. For example, in 1936, following the examination of 786 animals in OVC's laboratory, OVC published bulletins on "swine diseases and their prevention, navel-ill in foals, mastitis or garget in cows, Bang's disease (infectious abortion), and diseases of poultry."[143] A breakdown of results from these studies shows how the cattle, swine, and poultry industries had expanded, along with increased demand for knowledge about the health of companion animals, specifically dogs and cats (Figure 5.3).

[142] "Halton County Sudden Change to Alfalfa Blamed as Cattle Bloat—Trafalgar Township Farmers Act as Own Veterinarians to Afford Relief to Stock, Losses Reported," *The Toronto Daily Star*, October 9, 1936.
[143] C. D. McGilvray, "Report of the Ontario Veterinary College, 1937," Toronto: The Ontario Department of Agriculture, 1938, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 11.

Figure 5.3: Breakdown of the animals examined and diseases tested in OVC laboratories for 1936 and 1937

Laboratory Examinations for 1936

THE VETERINARY COLLEGE FOR 1936 9

BLOOD SERUM EXAMINATIONS FOR BANG'S DISEASE

Animal	Disease	Number of Samples Received	Positive	Doubtful	Negative	Unfit for Testing
Cattle	Bang's Disease (Infectious abortion)	20,753	2,547	822	17,537	147

LABORATORY EXAMINATIONS—During the year specimens were received for laboratory examinations indicated in the following tables:

PATHOLOGICAL EXAMINATIONS

Nature of Case	Cattle	Sheep	Horses	Swine	Dogs	Cats	Rabbits	Birds	Fox	Mink	Fish	Total
Tuberculosis	3						1					4
Neoplasms	3		1	23	26	23						34
Parasites	1	4	4	3	8	5		3	12	3		43
Enteritis	5		2	4	2				4	1		18
Pneumonia	7	2		17	3	1	1		4			35
Nephritis	5		2	1	2	1						11
Tissue from Operations	3	1	12		5							21
Hemorrhagic Septicemia	5	3		7								15
Gastritis			1	1	5				2			9
Food Poisoning					1				1	3		5
Abortion	2		2									4
Anemia				7								7
Pericarditis	3			3				1	1			8
Mastitis	8											8
Johne's Disease	5											5
Hepatitis	4		1	1	1							7
Actinomycosis	4											4
Examination of Pus	5	1	4									10
Blood Tests	2		6									8
Abscess	3		2									5
Red Water	9											9
Swamp Fever			6									6
Urine	2		1									3
Meat Inspection	4			7								11
Miscellaneous	5	2	9	5	8	1	1	3	4	13	3	54
Total	84	13	53	57	61	10	3	7	28	20	3	339

POULTRY DISEASES	No. of Cases
Adult pullorum infection	97
Ascites	3
Avian Diphtheria	4
Coccidiosis	367
Colds and Roup	18
Enterohepatitis (turkeys)	21
Enterohepatitis (chicken)	18
Fowl Cholera	34
Laryngo-tracheitis	61
Leucosis	53
Pullorum Disease of Chicks	610
Tuberculosis	43
Duck and Goose Septicaemia	4
Neurolymphomatosis	1
Other Infections	28
Volvulus and Impaction	6
Egg Bound	1
Internal Laying	33
Enteritis	23
External Parasitism	1
Impaction of Crop	5
Impaction of Gizzard	1
Injuries	23
Nutritional Disorders	364
Prolapse	7
Poisoning	1
Ruptured Liver	15
Tumours	61
Worms (ascaridia)	68
(capillaria)	38
(large tape)	93
(minute tape)	52
(gizzard)	1
(round and tape)	53
No evidence of Disease or Putrid	x 144
Totals	2352

x 84 of these were cases used at the O.A.C. on a nutritional experiment.

MISCELLANEOUS LABORATORY EXAMINATIONS

Milk and Cream Samples	139
Pus "	4
Water "	1
Feed "	10
Fecal (cow) "	1
Totals	155

Laboratory Examinations for 1937

THE VETERINARY COLLEGE FOR 1937 11

Blood Serum Tests For Bang's Disease

Number of samples tested	21,185
Number positive	2,655
Number doubtful	801
Number negative	17,557
Unfit for testing	172

Pathological Examinations

Nature of Case	Horse Water tests	Cattle	Sheep	Horses	Swine	Dogs	Cats	Rabbits	Birds	Foxes	Grain	Mink	Other Animals	Total
Tuberculosis		9				1						7		17
Neoplasms		7		15	1	15	3		1				1	43
Parasites		31	10	9	1	15	1	3	12	71	3	48	16	224
Enteritis		4	3		6	1	1							15
Gastritis		1			4	4				5			2	16
Pneumonia		2	2	1	10	1			1	8		14		44
Nephritis		2				5	1					2		8
Hemorrhagic Septicemia		4	8		8									20
Food Poisoning		8		7						4		23		39
Nutritional Diseases										10		22	3	35
Anemia				4										4
Pericarditis		1			1									2
Mastitis		4			1									5
Hepatitis		1			4	4	1			5		5		16
Actinomycosis		2												2
Red Water		2												2
Swamp Fever				5										5
Abscess		5		1		2								8
Examination of Pus		2		1										3
Blood Tests		1		6										7
Urine Tests				3										3
Semen Tests		2		3		2								7
Tissue from Operations		4		6										10
Joint Ill		3		9										12
Meat Inspection		5			7					12		9		33
Butter, Milk, Cream Tests	136													136
Red Water Tests	12													12
Miscellaneous		14	5	4	7			1		2	4	4	4	45
Totals	148	96	29	73	80	83	7	4	14	114	7	135	26	786

Poultry Laboratory Service

Routine Examination of Specimens: This laboratory service is increasing enormously and has been largely responsible for the increased amount of routine work. During the year, specimens were received for laboratory examination as indicated in the following tables:

Poultry Diseases	No. of Cases
Adult pullorum infection	113
Ascites	16
Avian Diphtheria	10
Coccidiosis	207
Colds and Roup	15
Enterohepatitis (turkeys)	19
Enterohepatitis (chicken)	14
Fowl Cholera	60
Laryngo-tracheitis	23
Leucosis	54
Pullorum Disease of Chicks	493
Tuberculosis	86
Cloacitis	1
Other Infections	34
Volvulus and Impaction	3
Egg Bound	3
Internal Laying	8
Enteritis	28
Ruptured Oviduct	3
Impaction of Gizzard	1
Injuries	9
Nutritional Disorders	357
Prolapse	12
Poisoning	3
Ruptured Liver	16
Tumours	87
Worms (ascaridia)	105
(capillaria)	28
(large tape)	58
(minute tape)	43
(round and tape)	54
No evidence of Disease, or Putrid	74
Total	1,937

Source: C. D. McGilvray, "Report of the Ontario Veterinary College, 1936," Toronto: The Ontario Department of Agriculture, 1937, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 9–10; McGilvray, "Report of the Ontario Veterinary College, 1937," 9–11.

The number of animals examined at OVC doubled in 1937 compared to 1936. With the addition of goats and an increase in nearly every animal, except cats, which decreased by three, and fish, which OVC faculty no longer recorded after 1936, from 1937 onward, OVC's laboratory work reflected industrial expansion for the production of food and furs—again, underscoring the demands of farmers and society for OVC professors to provide an understanding of causes, symptoms, diagnostic information, treatments, and preventive measures in response to livestock health concerns. Laboratory examinations correlated with the publication of bulletins containing pertinent livestock health information. OVC's expansion into offering the public direct access to its facilities, and the knowledge accumulated through extension services, helped identify, treat, and prevent common livestock health ailments that posed problems for Ontario's farmers and burgeoning animal agriculture industries.[144]

At the end of the interwar period, OVC began to shine more of a spotlight on its research work in its annual reports, which administrators believed brought more prestige and authority to the college and veterinary profession. The annual reports devoted sections to special courses for fur breeders, veterinarians, and public health officials, and to the investigational research, clinical work, and extension services that OVC had undertaken.[145] This new focus emphasized the health challenges faced by an expanding livestock industry and OVC's cross-departmental collaborations, and amplified its research and laboratory services for practising veterinarians, farmers, and eventually agricultural industrialists.

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[144] R. A. McIntosh, "Report of the Clinical Department," in McGilvray, "Report of the Ontario Veterinary College, 1937," 20.

[145] C. D. McGilvray, "Report of the Ontario Veterinary College, 1939," Toronto: The Ontario Department of Agriculture, 1940, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 4–10.

The annual reports also contained a brief section listing faculty changes, which highlight the shifting landscape of veterinary medicine and served to shape the course of the profession.[146] Many faculty members also took on work related to policy development, while others received appointments in government or at institutions such as the Ontario Research Foundation, dependent on demand for their research expertise. The provincial government had established the foundation to solve problems facing industrial agriculture using endowments from industry and matched by the province, moving beyond institutional research funding to take advantage of private investments and government support for investigations outside institutional programs.[147]

Veterinarians were seen as "guardians of one of the greatest sources of national prosperity" and "custodians" to human health "in providing wholesome disease-free foods of animal origin."[148] Industrialization saw the value of professional veterinarians to society move beyond their role of treating animal health problems facing farmers and pet owners to solving industrial problems. Dr. Gwatkin, for example, transitioned to a role with the Ontario Research Foundation following a tenure at OVC. At the foundation, he worked for a decade to further his work on poultry and cattle diseases and, eventually, diseases affecting swine. He travelled to Ontario farms to observe environmental conditions and conducted on-site and institutional experiments.[149] Gwatkin then took up various roles with Canada's Department of Agriculture, at its research laboratory in Alberta and the Animal Disease Research Institute in Quebec, and also assumed administrative and committee

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[146] For example, in 1919, six faculty members left the college, four due to appointments with the Deputy Minister of Public Health in Ottawa, the Biological Laboratory Ottawa, the Bureau of Statistics Ottawa, or the Soldiers' Land Settlement Board. The other two faculty members moved to a rural town or transferred to teach in another department at the University of Toronto. McGilvray, "Report of the Ontario Veterinary College, 1919," 5–6.
[147] C. D. McGilvray, "Report of the Ontario Veterinary College, 1929," Toronto: The Ontario Department of Agriculture, 1930, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 5.
[148] McGilvray, "Report of the Ontario Veterinary College, 1929," 5–6.
[149] C. D. McGilvray, "Report of the Ontario Veterinary College, 1938," Toronto: The Ontario Department of Agriculture, 1939, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 25; C. A. V. Barker and Terry Crowley, *One Voice: A History of the Canadian Veterinary Medical Association* (Ottawa: Distributed by the Authors through the Canadian Veterinary Medical Association, 1989), 190.

roles for Ontario's Veterinary Association.[150] Other veterinarians also worked for the Canadian Health of Animal Branch, though not all of these government appointees belonged to veterinary associations, which caused some tension concerning the standardization and legality of practising veterinarians (discussed later in this chapter).[151] Gwatkin's career took on a more policy-driven focus like many institutional veterinarians during the interwar period who transitioned between research, teaching, and policy roles. Their appointments and invitations were often determined by the public and industry's need for their specialized research expertise at any given time.

Like the First World War, the Second World War also saw increased demand in livestock industries. A demand for Ontario's poultry products and sheep's wool saw the control and prevention of diseases in poultry, sheep, cattle, and pigs become the primary focus of OVC's annual meeting in 1943. At this meeting, the principal of OVC highlighted the profession's importance in "maintaining an open door to the world's markets for livestock producers."[152] However, the demand for "Ontario's eggs and poultry meat during and after World War II resulted in larger flocks and more problems in their management."[153] The "emphasis on poultry and the food-producing animals during the national emergency" and the increasingly "well established" small animal veterinary practices over the previous two decades highlight the broad scope of work for institutionally trained veterinarians. Farmers, consumers, and the government's demand for their work was not limited to inspections and policy development but also extended to the diverse and complex everyday practices across Ontario.[154]

Throughout the first half of the twentieth century, the veterinary profession evolved to address the changing needs of livestock management, gaining standardization and authority while

[150] Barker and Crowley, *One Voice*, 190.
[151] Barker and Evans, *Century One*, 157–158.
[152] Barker and Evans, *Century One*, 184.
[153] Barker and Evans, *Century One*, 222.
[154] Barker and Evans, *Century One*, 185.

responding to and influencing changes in the animal–human relationship. By the onset of the Second World War, veterinary medicine had become standardized, and was recognized by both the government and farmers as necessary for safeguarding against the spread of disease and for helping to reduce public health challenges.

The veterinary profession underwent profound change from the early twentieth century until the Second World War. OVC adeptly responded to the rising demand for a practical learning environment that attracted more students while advancing academic standards and veterinary science. By implementing an experiential curriculum, OVC equipped students with the skills necessary to address evolving demands for livestock health as they changed with the increase of industrialized farming. This initiative not only increased the number of veterinarians and qualified inspectors accessible in rural communities, but also bolstered the overall status of the profession. Offering outreach services fulfilled three critical objectives. First, the services provided students with practical, experiential training, which the college had been criticized for overlooking in the past. Second, they fostered stronger connections with farmers, bridging the gap left by the condemnation of experiential practitioners. Finally, they revitalized and legitimized OVC's institutional training, emphasizing the significance of research skills while offering farmers direct access to cutting-edge laboratory and research services. This mutually beneficial relationship not only fuelled OVC's growth, but also elevated the standing of the veterinary profession in Ontario—an enduring ethos that the college maintains to this day.

Imperfect Progress

Throughout the late nineteenth and early twentieth centuries, the veterinary profession in Ontario made considerable advancements that were accelerated during the interwar period. However, the growth of the profession was not infallible. As challenges arose and discrepancies manifested, OVC,

in collaboration with the provincial and federal governments, worked to overcome obstacles that left livestock vulnerable to disease and farmers to economic repercussions associated with unhealthy livestock. Achieving this, however, was not without challenges.

During this period, nearly all published references to veterinarians highlighted veterinarians' advice or urged livestock owners to seek veterinary services. Some articles documented a veterinarian's expert witness testimony in cases of animal cruelty or examinations of racehorses, among other topics.[155] On a few occasions, articles recommended paying for a veterinary visit.[156] Though court cases challenging veterinarians' actions rarely appeared in Ontario's newspapers or agricultural periodicals, this does not imply that farmers did not question recommendations given by veterinarians.[157]

In the July 16, 1914, edition of *The Farmer's Advocate*, a farmer asked the journal about a lump on a cow's jaw in the "Questions and Answers. Veterinary" column. The farmer outlined that he consulted one veterinarian who "said [the lump] was from an accident and not serious, and he left [a] treatment for her." However, since the cow "did not improve quickly," the farmer called a different veterinarian for a second opinion. The second veterinarian said, "It was cancer and that she [the cow] would die soon." The cow "continued hearty, calved all right, and [was] milking well. The jaw healed and there [was] no odor, but [the jaw was] a little thickened and the lip adheres to the jaw." Given the discrepancy between diagnoses and recommendations, the farmer was unsure

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155 A regular column in *The Toronto Daily Star*, entitled "Harness Horses by 'Hal. B'," discussed the health and state of horses involved in horse racing. The paper also included individual articles on horse's health and how it affected the outcome of races, noting when "veterinarians were on duty to care for and destroy injured horses." See "All Horses Run," *The Toronto Daily Star*, March 24, 1933. Other newspapers also regularly reported on horse racing and its outcomes.
156 For example, see "Agriculture, Call in a Vet," *The Weekly Mail*, Toronto, Thursday, June 26, 1884.
157 For example, on one occasion, *The Campbellton Graphic* (from Campbellton, Nova Scotia) documented when a judge, on hearing a case about a sore on a mule's back, dismissed a veterinarian's testimony. He fined the mule's owner for animal cruelty, concluding that "With all due respect to the expert testimony, you have had introduced in your behalf to show that the mule's back does not pain him, I will fine you $50, … I asked the mule if the sore hurt him, and he said it did." "A Competent Witness," *The Campbellton Graphic* xx, no. 28 (January 17, 1918), 5. On another occasion, a human medical doctor questioned the motives of the Pasteur Institute (who developed the rabies vaccine) and promoters of the "rabies industry." "Ready to Forfeit $1000 if Boys Died from Rabies, Niagara Falls, N.Y., Physician Suggests That Tetanus or Morphine Killed Little Johnny Taylor," *The Toronto World*, Thursday, March 24, 1910.

whether the cow's milk was "fit to send to factory," whether offspring would be affected, or whether it was "illegal to use the milk." The editor responded by acknowledging that the "first veterinarian was correct." The editor outlined that the thickening of the jaw and adherence of the lip were "normal sequels to direct injury," and "if it was lump jaw [disease], it [would] enlarge and probably break again." However, the editor cautioned that the farmer should call on the veterinarian again because if it was an injury, the milk was "fit for any purpose, and it [would] be safe to breed her again." However, if it was lump jaw, it was illegal for the farmer to use or sell the milk and "not wise to breed her."[158] This example, a situation where a farmer could access veterinary services, reveals some inconsistencies within the veterinary profession itself. More importantly, it clearly demonstrates the decision-making power farmers held and their influence on livestock health.

Although OVC made great strides in addressing livestock health challenges when called upon to do so, it continued to restrict access to veterinary practice. Despite the significant transformation within the veterinary profession, OVC's student population reflected the social and cultural values of OVC's leadership, as it remained predominantly male. Elizabeth Stone, Dean of OVC from 2005–2015, and historian Kevin Woodger have written various articles on the history of OVC and on women's enrolment at OVC over the twentieth century.[159] They argue that veterinary institutions and OVC were "professional gatekeep[ers]," whose admissions practices favoured male applicants. Women who did enroll faced a "masculine culture."[160] Eventually, the number of women

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158 "Questions and Answers. Veterinary. Injury to Jaw," *The Farmer's Advocate and Home Magazine* XLIX, no. 1138 (July 16, 1914): 1332.

159 Kevin Woodger and Elizabeth A. Stone, "'One of the Boys': Women at the Ontario Veterinary College in the Twentieth Century," *Historical Studies in Education / Revue d'histoire de l'éducation* 32, no. 1 (Spring 2020): 47–67; Kevin Woodger and Elizabeth A. Stone, "Equine Surgery at the Ontario Veterinary College in the Early 20th Century," *Canadian Bulletin of Medical History* 32, no. 1 (April 2015): 181–202; Kevin Woodger and Elizabeth A. Stone, "The Ontario Veterinary College and the Establishment of the University of Guelph," *Ontario History* 108, no. 1 (July 24, 2018): 43–63; Kevin Woodger, Elizabeth A. Stone, and Cate Dewey, "Veterinary History - Histoire Vétérinaire: The creation of the Department of Population Medicine at the Ontario Veterinary College," *Canadian Veterinary Journal* 58, no. 4 (April 2017): 403–409; Kevin Woodger and Elizabeth A. Stone, "Veterinary History - Histoire Vétérinaire: The Ontario Veterinary College after World War II: 1945–1953," *Canadian Veterinary Journal* 56, no. 4 (April 2015): 399–444.

160 Woodger and Stone, "'One of the Boys'," 48–49.

attending OVC increased in the 1970s and 1980s (Table 5.1), but the view among faculty members that women were inept persisted.

Table 5.1: Number of men and women who graduated from OVC, 1928–1990

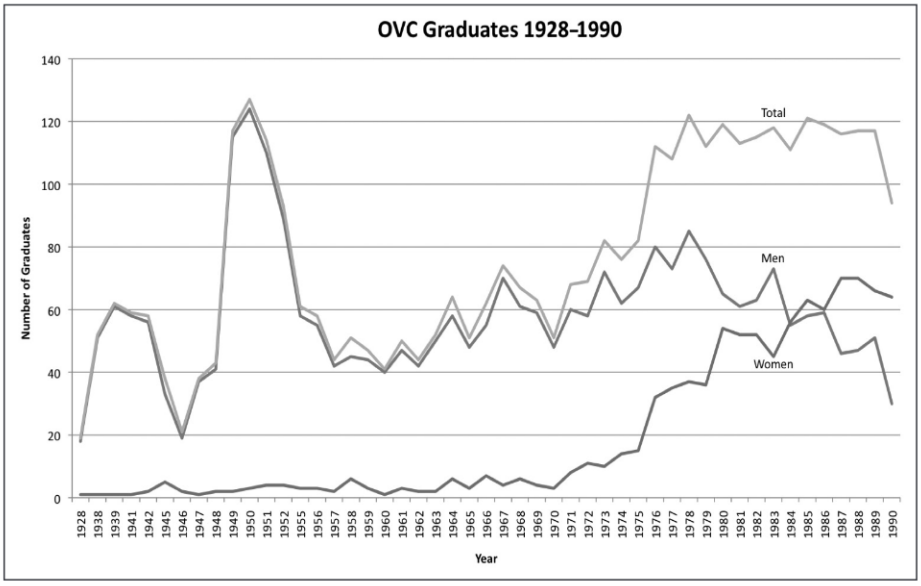

Figure 1. *Ontario Veterinary College Graduates, 1928–1990. Data Courtesy of OVC Registrar.*

Source: Data Courtesy of OVC Registrar. Woodger and Stone, "'One of the Boys'," 52.

Many at OVC believed that women were "unsuited" for practising veterinary medicine due to the perception that they were "physically unsuited for the heavy labour involved in caring for [large animals]," their tendency to focus on humanities rather than an interest in science and mathematics, and the need to work for male clients on "farms, at racetracks, or in breeding stables."[161] In Canadian parliamentary debates, ministers spoke about the success of Canada's Animal Health Branch due to its makeup of "men fully qualified for the work, men who not only have to be graduates of a well recognized veterinary institution, but must in addition to that, pass a

[161] Woodger and Stone, "'One of the Boys'," 48, 49, 54, 62; Lisa E. Panayotidis and Paul Stortz, "Introduction," in *Women in Higher Education, 1850–1970*, eds. Lisa E. Panayotidis and Paul Stortz (New York: Routledge, 2016), 5, as found in Woodger and Stone, "'One of the Boys'," 49; Russell, *How Agriculture Made Canada*, 244.

special examination before they are permitted to undertake this important work."[162] However, as Kathryn Ann Douglas argues in her 1999 dissertation on female veterinarians, girls "may form deeper bonds with pets than do boys."[163] Some women were chosen based on their ability to nurture and connect with animals,[164] although there were those who argued that this bond could affect their objectivity. Douglas notes that a number of studies maintained that this bond helped female veterinarians understand psychological issues, public health implications of zoonotic diseases, and animals' role as "sentinels," providing "early warning of environmental hazards."[165] Gendered values, social and cultural influences, and organizational practices "biased toward men" posed obstacles for women looking to embark on veterinary training. As Julie Kumble and Donald Smith, ninth Dean of Cornell University's College of Veterinary Medicine, have argued, none of these obstacles were "insurmountable." However, when combined, they added up to significant challenges.[166]

The first female doctor of human medicine graduated from medical school in Canada in 1883 and the first female dentist from a Canadian dental school in 1893.[167] In fact, the Toronto Women's Medical School was established in 1883 to overcome the obstacles women faced in enrolling in medical schools; similar institutions were established in the late nineteenth century across the United States and Canada (among them Guelph's MacDonald Institute for home

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[162] Canada. *House of Commons, Parliamentary Debates*, "Canadian Hansard," 13th Parliament, 5th Session, March 9, 1921 (Simon Fraser Tolmie (Minister of Agriculture)). https://lipad.ca/full/permalink/590465/.
[163] Kathryn Ann Douglas, "Becoming Veterinarians: A Relational Account of the Experiences of Ten Women," PhD Diss, (Ontario Institute for Studies of Education of the University of Toronto, 1999), 31.
[164] Julie Hipperson, "Professional Entrepreneurs: Women Veterinary Surgeons as Small Business Owners in Interwar Britain," *Social History of Medicine* 31, no. 1 (February 2018): 126.
[165] Douglas, "Becoming Veterinarians," 67; L. T. Glickman, "Implications of the Human/Animal Bond for Human Health and Veterinary Practice," *Journal of the American Veterinary Medical Association* 201, no. 6 (1992): 848–851 in Douglas, "Becoming Veterinarians," 58–59.
[166] Julie Kumble and Donald F. Smith, *Leaders of the Pack: Women and the Future of Veterinary Medicine* (West Lafayette, Indiana: Purdue University Press, 2017), 28.
[167] Woodger and Stone, "'One of the Boys'," 51.

economics). However, the gendered dynamics of farming and working with livestock and large animals limited women's enrolment in veterinarian institutions.

Today, some view veterinary medicine as a "caring" profession;[168] others say that despite being "numerically dominated by women," the profession still possesses a "gendered masculine" culture that "values masculine characteristics."[169] Historian Julie Hipperson argues that the growth of small animal practices during the interwar period led Britain, and specifically the Royal Veterinary College, to focus on recruiting women into the "less lucrative field of companion animal practices" in the 1920s and 1930s. This shift stemmed from the view that women were "better suited to the affectionate care of small domesticated animals."[170] In the nineteenth and twentieth centuries, society valued women as natural "healers and nurturers." These values helped women carve out a place within the human medical profession, particularly in treating female patients.[171] However, because the veterinary profession was associated with caring for military horses and large animals owned by male farmers, it remained predominantly male throughout the early and mid-twentieth centuries.

Following the implementation of the *Sex Disqualification Removal Act* in the U.K. in 1919 and after enrolment at OVC had dropped, few women were accepted for institutional veterinary training.[172] The first woman, Elizabeth Barrie Carpenter, was admitted to OVC in 1924 before

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168 Hipperson, "Professional Entrepreneurs," 128.
169 Leslie Irvine and Jenny R. Vermilya, "Gender Work in a Feminized Profession: The Case of Veterinary Medicine," *Gender and Society* 24, no. 1 (2010): 56–82; Kumble and Smith, *Leaders of the Pack*, 28.
170 Hipperson, "Professional Entrepreneurs," 126; Woodger and Stone, "'One of the Boys'," 59.
171 Regina Markell Morantz-Sanchez, *Sympathy and Science: Women Physicians in American Medicine* (New York: Oxford University Press, 1985), 4–5, and Ellen S. More, *Restoring the Balance: Women Physicians and the Profession of Medicine, 1850-1995* (Cambridge, Massachusetts: Harvard University Press, 1999), 42–43, in Woodger and Stone, "'One of the Boys'," 53.
172 U.K. Parliament, The Sex Disqualification (Removal) Act 1919, Chapter 71, December 23, 1919. https://www.legislation.gov.uk/ukpga/Geo5/9-10/71/enacted/data.html. For more, see Government Legal Department (UK), "The Sex Disqualification (Removal) Act 1919: 100 years ago the Sex Disqualification (Removal) Act was given royal assent," Gov.UK, December 24, 2019. https://www.gov.uk/government/news/the-sex-disqualification-removal-act-1919.

graduating in 1928.[173] According to Woodger and Stone, little is known about Carpenter other than she was the daughter of a veterinarian from Detroit and moved to California to open a hospital for cats following graduation.[174] At this time, and according to McGilvray's views of the future of the profession and its responsibility to serve the interest of industrial livestock farming, there was a demand for large animal veterinarians.[175]

Geraldine E. Fritz, also an American, became the second woman to graduate from OVC in 1938, a decade after Carpenter.[176] Fritz commented that she thought her admission was a "special favour and concession." On her acceptance, OVC Principal McGilvray noted that "while this is not a co-educational institution, your admission has been approved."[177] The first Canadian woman, Jean Rumney of Hamilton, graduated in 1939.[178] Edith Williams, another female applicant, applied "regularly" for ten years before she was admitted to OVC in 1937. McGilvray told Rumney and Williams during their admissions interviews that he "affected not to be interested in women applicants" and believed women were unsuitable to large animal practice.[179] He remained indifferent to women's applications until all suitable applications from men were reviewed. However, according

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[173] Gattinger, *A Century of Challenge*, 98; Woodger and Stone, "'One of the Boys'," 51. In the U.S., the first woman graduated from McKillip College in Chicago (also C. D. McGilvray's alma mater) in 1903. Cheville, *Pioneer Scientists and the Great Animal Plagues*, 106.

[174] P. J. G. Plummer to C. A. V. Barker, Letter, December 19, 1991, CA F2-13-3, RE1 OVC A0292, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 3, in Woodger and Stone, "'One of the Boys'," 51.

[175] *The Toronto Daily Star* reported in 1934 that Dr. Elizabeth Roberts became the first licensed female veterinarian in California. The author wrote that "the theory that animals appreciate kindness more than human beings is the reason" the twenty-six-year-old "attractive" woman passed her exams, with the highest grade recorded at the time, to become a veterinarian. As a veterinarian in the heart of Humboldt County's dairy industry, she proclaimed she "likes animals best." Though the article does not explicitly state whether Dr. Roberts practised large or small animal veterinary medicine, it is likely she did some work with cattle. Though the article uses the gendered language of the time, the newspaper considered it important to publish her achievements in a male-dominated profession. "Woman Becomes Vet Likes Animals Best," *The Toronto Daily Star*, January 30, 1934, 26. https://www.proquest.com/hnptorontostar/docview/1434116180/BD971CDF88E481DPQ/45?accountid=15182&sourcetype=Newspapers.

[176] Woodger and Stone, "'One of the Boys'," 51.

[177] Geraldine Fritz to F. E. Gattinger, Letter, December 28, 1961, CA F2-18-1, RE1 OVC A0018, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 5, in Woodger and Stone, "'One of the Boys'," 54.

[178] Gattinger, *A Century of Challenge*, 98.

[179] Gattinger, *A Century of Challenge*, 98.

to OVC registrar F. Eugene Gattinger, McGilvray "[fought] in support of [the women's] applications."[180]

In their applications, women needed to convince OVC admissions faculty of their suitability by conveying their excellent academic standing and relevant experience. But even this was often insufficient if there were qualified male applicants. To enhance their chances, some women developed additional education and hands-on experience on their own farms. In the 1940s, an ex-servicewoman in the Royal Canadian Air Force Women's Division also discovered that other ex-servicewomen had included letters from their local politicians in their applications, presumably indicating the need for their veterinary services in their local community.[181]

Later, in the 1960s, Gattinger replied to a female applicant stating that "professional openings for women in the veterinary field are rather limited." "Few women are suitable for establishing themselves in large animal practice," he continued, and "for this reason, and also because we have a preponderance of male applicants, our Committee on Admissions is held to a quota of four women per year." It was OVC's policy to "defer applications of women until the files of male applicants have been reviewed."[182] These inherent and written policies purposefully discouraged women from becoming veterinarians throughout the first seventy-seven years of OVC (the period of this study). Despite these obstacles, some women gained veterinary accreditation, but only within the confines dictated, which relegated women to small animal and companion animal fields. These fields were less common and less profitable at the time than industrial farming and large animal work.

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[180] Gattinger, *A Century of Challenge*, 98.
[181] Gattinger, *A Century of Challenge*, 104.
[181] Andrew L. MacNabb, "Report of the Ontario Veterinary College, 1948," Toronto: The Ontario Department of Agriculture, 1949, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario; Woodger and Stone, "'One of the Boys'," 55.
[182] F. E. Gattinger to Lynne Benson, Letter, January 4, 1960. Courtesy of Lynne Benson, in Woodger and Stone, "'One of the Boys'," 54; Barker and Evans, *Century One*, 241.

Historians have provided ample evidence of women's role in sustaining the household economy, particularly in producing animal by-products such as milk, cheese, and butter.[183] However, as production industrialized, these processes changed. Globally, women's agricultural work also became subject to state regulation and legislation meant to limit women's work and reify men's work. Women's role as consumers and purchasers of healthy foods for their families also influenced veterinary practices, with the veterinary profession economically motivated to answer their calls for healthier milk and other animal products.[184]

Men at OVC believed that the profession required a masculine culture based on the veterinary services they offered and the clientele they served, despite gender ideals that underscored women's nurturing nature. As historian Linda Ambrose argues, in contrast to the rural myth, agricultural experts recommended raising more interest in farming by making it "an intelligent occupation based on scientific and business principles."[185] However, if "men need more science and business to make farm life attractive," the editor of *The Farmer's Advocate* argued, "women also needed more than poetry."[186] Despite masculine perspectives held within the veterinary profession, the editor of *The Farmer's Advocate* reprinted a speech given at the Farmer's Institute Convention in

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[183] For more on women's role on dairy farms and milk and cheese industries, see Marjorie Griffin Cohen, "The Decline of Women in Dairying," *Histoire Sociale - Social History* 17, no. 34 (November 1984): 307–334; Marjorie Griffin Cohen, *Women's Work: Markets, and Economic Development in Nineteenth-Century Ontario* (Toronto: University of Toronto Press, 1988); Sally McMurray, *Transforming Rural America: Dairying Families and Agricultural Change, 1820–1885* (Baltimore: The Johns Hopkins University Press, 1995); Sally McMurray, "Women's Work in Agriculture: Divergent Trends in England and America, 1800 to 1930," *Comparative Studies in Society and History* 34, no. 2 (1992): 248–70; Peter A. Russel, *How Agriculture Made America: Farming in the Nineteenth Century* (Montréal & Kingston: McGill-Queen's University Press, 2012); Bonnie White, "'What to Do with the Girls?' The Legacy of Women Farm Workers in Britain, 1919—1939," *Historical Reflections / Réflexions Historiques* 42, no. 2 (2016): 97–11; Kendra Smith-Howard, *Pure and Modern Milk: An Environmental History since 1900* (New York, NY: Oxford University Press, 2014). For more on women's agricultural work in Ontario, Carmela Patrias, "More Menial than Housemaids? Racialized and Gendered Labour in the Fruit and Vegetable Industry of Canada's Niagara Region, 1880–1945," *Labour / Le Travail* 78 (2016): 69–104; and in Canada, Catharine Wilson, *Being Neighbours: Cooperative Work and Rural Culture, 1830–1960* (Toronto & Montréal: McGill-Queen's University Press, 2022).
[184] Ebejer, ""Milking" the Consumer?," 20–39.
[185] Linda Ambrose, ""Better and Happier Men and Women": The Agricultural Instruction Act, 1913–1924," *Historical Studies in Education / Revue d'histoire De l'éducation* 16, no. 2 (2004): 269–270.
[186] W. J. Kennedy, "The Farmers' Institute, The Country Woman, Boy and Girl," *The Farmer's Advocate and Home Magazine* XLVIII, no. 1079 (December 4, 1913): 2123–2124; Ambrose, "Better and Happier Men and Women," 269.

Washington, D.C., in 1913, which claimed that the conditions causing country women, boys, and girls to "become dissatisfied," included, among other physical realities, that "ninety percent of boys and girls" were motivated to go to larger towns and cities because of the "drudgery and seclusion which their mothers [were] compelled to endure," a "lack of social privileges," and inadequate and misdirected education facilities.[187] By extension, women needed access to better education and technological opportunities. However, despite their role as caregivers and nurturers, especially in remote regions, women were excluded from veterinary education.[188]

Rural communities wanted more community organization and "less rhetoric about education," according to W. J. Kennedy, Director of Agricultural Extension at Iowa State College. During his address at the American Association of Farmers Institutes' Convention, Kennedy argued that rural education needed to "dignify the two greatest of our industries: agriculture and homemaking." Doing so, he argued, would enable community leaders, like the women involved in the Women's Institutes, to take the initiative without relying on outsiders' expertise.[189] Though many women were excluded from veterinary training, OVC did realize the need to produce rural community leaders who would foster support for the profession, and in 1951, established the Student Wives' Auxiliary.[190]

Some wives of veterinary students worked as assistants or participated in the business of a veterinary practice. The auxiliary organized lectures and surgical and clinical demonstrations given by senior veterinary students and faculty to train women for the roles and "responsibilities" they may undertake.[191] Many women also met demands to become the "principal breadwinner" while their

[187] Kennedy, "The Farmers' Institute, The Country Woman, Boy and Girl," 2123–2124.
[188] Megan Davies, "Mother's Medicine: Women, Home and Health in the Peace River Region of British Columbia, Canada, 1920–40," in *Medicine in the Remote and Rural North, 1800–2000*, eds. J. T. H. Connor and Stephen Curtis (London: Pickering & Chatto Limited, 2011 and Routledge, 2016), 199–214.
[189] Kennedy, "The Farmers' Institute, The Country Woman, Boy and Girl," 2123–2124.
[190] Lisa Cox, Katie Anderson, and Elizabeth A Stone, "Together We Build: The OVC Student Wives' Auxiliary," *The Canadian Veterinary Journal* 57, no. 1 (2016): 32-36.
[191] Cox, Anderson, and Stone, "Together We Build," 35.

husbands studied.[192] The auxiliary also became a welcome "social outlet" for wives as their husbands studied for long hours.[193] They fundraised and organized charitable initiatives, weddings, baby showers, and farewell parties for graduates. For example, Schofield's long-standing work in and support for Korea received funds from the auxiliary.[194]

The auxiliary created a community for women while their husbands embarked on veterinary training at OVC. Though a product of its time, before OVC students were largely unmarried and composed mainly of women, the auxiliary helped advance women's adoption of "important clinical and clerical roles in veterinary practice" that became veterinary office manager and veterinary technician professions.[195]

OVC placed emphasis on the duty of veterinarians to serve their community and the economy as a whole, and encouraged veterinarians, and their wives, to become respected leaders in their rural communities. Following the First World War, this duty to serve and contribute to nation-building increased. Consequently, despite increased regulation and reliance on scientific research processes that excluded experiential practitioners from offering livestock healthcare following the war, OVC adopted curriculum, educational outreach programs, and laboratory services that bridged this divide. Experiential training in farming and industrial environments and outreach programs allowed OVC to slowly overcome the top-down approach previously resisted by farmers, and slowly, the institution exerted influence over livestock health practices on the ground.

The veterinary profession made significant advancements throughout the interwar period. However, these advancements were accompanied by notable challenges. During this transformative period, OVC implemented innovative strategies to reach out to and effectively meet the needs of

[192] Cox, Anderson, and Stone, "Together We Build," 34.
[193] Cox, Anderson, and Stone, "Together We Build," 34–35.
[194] Cox, Anderson, and Stone, "Together We Build," 35.
[195] Cox, Anderson, and Stone, "Together We Build," 36.

farmers while preparing veterinary students for their critical roles in the rapidly industrializing landscape of livestock agriculture and food production. Through dedicated instruction and the dissemination of informative publications, OVC not only enhanced operational efficiency but also promoted rigorous veterinary standards. This proactive approach ensured that private-practice veterinarians across Ontario were kept abreast about the latest research methods and laboratory examination protocols. By fostering a spirit of collaboration, the veterinary community was better equipped to tackle livestock health issues and curb the spread of disease throughout the province. Moreover, the profession recognized the pressing need to fill the void left by experiential practitioners who, no longer legally able to accept remuneration for their services, lacked the laboratory support now considered necessary to limit and eradicate the spread of disease. Together, these initiatives underscore the vital role of veterinary medicine in safeguarding public health and improving agricultural productivity in Ontario.

OVC's development of research, investigation, and extension services provided farmers with access to its clinics and laboratories, which strengthened collaborative efforts between farmers and professional veterinarians. This collaboration was instrumental in the growth and expansion of industrial agriculture, in solving livestock health challenges that arose during the industrialization of livestock farming, and in the profound changes that accompanied the transition in the animal–human relationship. Professional veterinarians did not just serve the needs of farmers; they served the needs of industry (large dairy and meat–packing corporations) and the state (public health regulations, military, inspectors, etc.). Although their efforts were not infallible, due to the uneven distribution of veterinary oversight across Canada and the gender ideals upheld by OVC faculty, veterinary medicine evolved over the twentieth century. It became increasingly adept at serving the needs of livestock owners and overcoming livestock health challenges. The initiatives undertaken

during the interwar period laid the foundation for the professional veterinary medicine evident today and showcased the power of collaboration in confronting complex public health challenges.

Conclusion

The animal–human relationship and livestock healthcare practices underwent significant changes between 1862 and 1939, with farmers, experiential practitioners, and professional veterinarians all playing a role in this transformation. The veterinary profession tackled livestock health challenges and, according to professional and institutional scholars, successfully pushed back against what it considered to be "quack" practices. Amid this backdrop, the profession of veterinary medicine embarked on a non-linear, blurred journey toward gaining authority. Veterinary science was slow to transform how health practitioners treated livestock. The first veterinary courses in Canada in 1862 marked a starting point, but it would take more than three-quarters of a century, until the beginning of the Second World War, for Canadian society to experience the profound changes that helped advance the veterinary profession's authority and replace that of experiential practitioners.

We can point to the way that farmers accessed and practised livestock healthcare as a primary factor in the path that veterinary medicine took to professionalization. How farmers accessed and practised livestock healthcare—which was very much influenced by their experiences and motivations—played a crucial role in this non-linear progression and contentious struggle for authority. As I have shown, the institutionalization of veterinary medicine in 1862 did not immediately transform how rural people practised livestock healthcare or accessed veterinary science information. The popular livestock health publications not only highlight the strategies used by livestock owners to care for their animals, but also offer a lens into livestock health and the illnesses, diseases, and injuries that were common in rural environments.

Social, cultural, *and* economic developments significantly influenced the decisions of farmers and veterinarians, which, in turn, shaped livestock healthcare practices in the late nineteenth and early twentieth centuries and into the interwar period. This evolution continued as regulations became stricter. To understand how the development of veterinary medicine influenced livestock

healthcare practices, I chose to focus on a region of Ontario that is historically significant to the field of veterinary medicine. This region was home to the world-renowned London Veterinary Correspondence School and continues to host North America's first veterinary institution, the Ontario Veterinary College (OVC). By examining the tensions between experiential practitioners and professional veterinarians in this region, we gained valuable insights into the competition for veterinary authority and its profound impact on livestock healthcare.

During this period, the future of livestock husbandry in the twentieth century was not a singular idea. Farmers relied on information they found to be practical and accessible, including tried-and-true solutions to the challenges they faced. Initially, in cases of emergency, farmers often turned to neighbours who had more experiential knowledge to diagnose diseases or acquire medicines through an informal network of labour exchange. Institutional training—and the link to a distrust of book learning—was met with skepticism by farmers. Some preferred informal education, made available through popular animal health manuals, agricultural periodicals, and correspondence courses, to gain experiential knowledge beyond what they could access in their own rural community, or to learn from other farmers with particular experience. It was a slow and inconsistent transition toward greater reliance on veterinary science as professional veterinarians gained experience with advances in veterinary science.

Animal healthcare practice evolved with the significant shift from addressing individual livestock health challenges to herd medicine, coinciding with the industrialization of livestock farming. Early on, farmers interacted daily with their livestock, which allowed them to observe an animal's health and notice any changes or symptoms quickly. Although they may not have been familiar with advanced veterinary techniques, they could soon isolate and treat an animal using local and popular experiential knowledge. Veterinarians often relied on a farmer's observations (before or between veterinary visits) and ability to identify health issues quickly. As farming became

industrialized, livestock health management shifted to a larger scale. The growth of larger farms, which raised more livestock and expanded trade networks, prompted institutional and state veterinarians to develop standardized measures and inspections, which professional veterinarians oversaw. These initiatives mitigated the industry's effect on public health and protected Canada's economic interests. Ultimately, the veterinary profession was able to establish its authority and overcome the challenge posed by experiential practitioners by developing practical veterinary services that served farmers' financial interests in maintaining livestock health.

Chapter by chapter, my dissertation traces this gradual reliance on veterinary medicine. Initial resistance by farmers to expensive veterinary services—viewed as top-down, time-consuming, and expensive—dissipated over the course of seven decades as institutional veterinarians and veterinary associations lobbied the provincial government for greater authority. New and amended legislation pushing for veterinary services (such as inspections and zoonotic disease controls) in food-producing processes served to restrict the practice of experiential animal health care. During this period, however, farmers initially had limited access to veterinarians who could help them identify, treat, or prevent the livestock health challenges they faced. It was indeed an arduous journey for the veterinary profession to overcome this gap and establish its authority.

Before professional veterinarians were readily accessible in rural southern Ontario, farmers and experiential experts practised everyday or routine livestock health procedures, much like home medicine for humans at the time. Some animal health experts received minimal training, while others used the knowledge they had acquired from experience or the expertise of a neighbour, like William Standen relied on his neighbours Henry Fuller and Alfred Morren. While many professional histories of veterinary medicine portray experiential practitioners as cruel and without knowledge, in reality, they applied their tried-and-true knowledge of procedures and livestock anatomy to help

their neighbours—sometimes for a profit, sometimes as part of a reciprocal labour economy, but not always in the malicious manner that they have been depicted.

With the expansion of livestock raising in rural Ontario and the development of veterinary medicine, farmers began to seek out avenues for increasing their own knowledge about livestock health care. At the outset, they explored using wider networks of knowledge exchange, which included published works on livestock health, popular manuals with information on proven scientific advancements and new experiential knowledge, and correspondence courses. The widespread use of these publications led many individuals to treat livestock using experiential knowledge instead of consulting institutionally trained veterinarians. At the same time, veterinary institutions and professional associations sought to undermine the popularity of experiential veterinary knowledge in order to establish their authority and distinguish themselves from experiential practitioners. Consequently, the Government of Ontario enacted legislation in response to calls from OVC graduates to prohibit experiential work. Initially, some experiential practitioners who had not trained at institutions like OVC were grandfathered into licensing; however, others faced fines for practising veterinary medicine without a licence.

The professionalization of veterinary medicine followed three paths to establish authority in Ontario. First, professional veterinarians who were members of the Ontario Veterinary Association (OVA), along with faculty from OVC, advocated for licensing standards that mandated institutional training. They criticized experiential practitioners and rejected the legitimacy of the London Veterinary Correspondence School. This created a contentious discourse between professional veterinarians and informal experts who published popular manuals over the prioritization of experiential and institutional knowledge. In response, the Government of Ontario introduced provincial *Veterinary Acts* aimed at restricting experiential practices, thereby widening the divide between farmers and institutional veterinarians.

Leadership at OVC criticized popular schools, such as the London Veterinary Correspondence School. In contrast, some professional veterinarians argued that OVC was attempting to popularize veterinary medicine and increase the number of graduates trained at accredited institutions. While other veterinary institutions were admitting only a few students, with academic excellence and a top-down approach to veterinary medicine as their primary focus, OVC struck a balance between academic rigour and accommodating larger enrolment numbers. OVC recognized the importance of educating those "on the ground" who worked with livestock daily, and so was motivated to offer practical advice and services to farmers that would bridge the gap left by the exclusion of experiential experts under new licensing regulations. Fieldwork provided OVC students with experiential learning opportunities while also disseminating institutional knowledge and advancements in veterinary medicine.

Under pressure from the state to comply with public health regulations, farmers began adopting veterinary science principles and institutional knowledge, albeit sometimes reluctantly. It was becoming clear that, with an increased focus on limiting the spread of zoonotic diseases and the emerging scientific consensus on the contagion theory of disease dissemination during a period when humans and animals interacted closely in shared environments, a standardized approach was best for combatting disease. Many farmers initially resisted any restrictions imposed by the government, along with the associated expenses of implementing these restrictions (such as destroying diseased animals). As the veterinary profession gained respectability and became more accessible in the early twentieth century, farmers began to comply. Moreover, legislative measures provided compensation for law-abiding farmers and penalized those who attempted to resist preventive measures.

Second, in response to the gap created by the exclusion of experiential experts, professional veterinarians sought to improve their relationship with farmers and worked to become more

accessible throughout rural Ontario. They focused on delivering veterinary services that alleviated the challenges farmers faced in maintaining the health and quality of food products. Many farmers and experiential practitioners resisted veterinary authority because they believed institutional veterinarians lacked experience working in rural farming communities. However, significant national and global events, such as the First World War and the professionalization of human medicine, promoted the standardization of practices and accelerated the acceptance of scientific approaches. This shift helped to establish a reputation for veterinarians and veterinary institutions, which slowly built up farmers' trust.

Numerous Canadian veterinarians served in the South African War and, in doing so, returned with skills to successfully combat outbreaks of fatal, zoonotic equine diseases, such as glanders. By the time of the First World War, veterinarians had experience limiting animal health challenges and preventing the spread of diseases during the mass transportation of livestock and humans. As a result of the Canadian Army Veterinary Corps' success in these wars, the profession gained respect for their achievements, which accelerated the professionalization of veterinary medicine, promoted the acceptance of public health measures, and helped to eliminate the spread of fatal zoonotic diseases.

Finally, this cooperative approach between farmers and professional veterinarians was key to standardizing livestock healthcare practices, which benefited farmers, consumers, and Canadian society as a whole. In turn, standardization was instrumental in ensuring that environments for livestock production and processing were sanitary. Livestock were viewed for the value they brought as food and clothing products, companionship, or specimens for health research—a huge shift in the animal–human relationship from a close, working relationship to livestock as production units. This change accelerated as industrialization grew.

Increasing industrialization and mechanization of farming led to farmers moving away from using workhorses to using mechanized equipment such as tractors. Fewer workhorses meant farmers didn't have to think about the animal's health and welfare in the same way. At the same time, the expansion of poultry, swine, cattle, and fur-bearing animal production for meat, by-products, and clothing resulted in bigger herds and flocks. The close quarters in which the animals or birds were kept meant that disease could spread more quickly. Farmers were also less able to observe changes in livestock health quickly; as a consequence, they were forced to use methods enabling them to treat large numbers of animals at once, to create more sanitary, healthy environments, and to use preventive measures to reduce the spread of disease.

However, veterinary medicine was not an entirely scientific or revolutionary practice as it is often described in professional histories. Rather, what many scholars and veterinarians have called "quack medicine" or "folk medicine" had many similarities, overlapping with the veterinary science taught at OVC both before and after the First World War. Many pharmaceutical treatments described by professional veterinarians utilize similar ingredients to those used by experiential practitioners. Although popular experiential animal health manuals described precise measurements for combining drugs, similar to the Materia Medica courses at OVC, it is clear that veterinarians did not exhibit the same trust in farmers to deliver these curative formulas. At the same time, some chemists and veterinarians capitalized on this demand by providing farmers access to these pharmaceutical drugs. Both authors of popular manuals and professional veterinarians instructing students at OVC recommended the same drugs, including those produced by veterinarians, such as Dr. Bell, and chemists, like the Fleming Brothers. As veterinary medicine developed, these brands gained the trust of farmers and veterinarians alike because they eliminated the margin of error or time necessary to formulate the medicines required to treat their animals. Some of these formulas were also recommended for use in humans. Therefore, keeping these drugs on hand allowed farmers

to quickly treat livestock, much like following the initial observations of veterinarians, without the need to wait for costly veterinary services.

Third, and finally, to build cooperation and meet the practical needs of farmers who required information on how to diagnose, treat, and prevent common diseases and conditions, OVC adapted its curriculum. This was contrary to the wishes of Duncan McEachran who sought to elevate institutional entrance standards. As farmers' reliance on experiential practitioners diminished, the Canadian government's focus on growing the livestock industry (as an important part of nation-building efforts) and feeding an increasingly urban population provided economic incentives for veterinarians to expand their services. In response, professional veterinary associations and institutions sought to increase enrolment and educate more people who could meet the demand for veterinary services in rural communities and disseminate knowledge of advances in veterinary medicine. Eventually, OVC promoted the research skills of food inspectors, highlighting their role in national development. OVC also developed a reciprocal relationship by giving farmers access to its laboratory services.

OVC's combined approach to give students experiential knowledge and to offer laboratory services to farmers was, in some ways, a new business model—a response to industrial farming and very different from its initial top-down approach. It engaged in research projects that met the demands of the livestock industry.

Laboratory-based veterinary medicine helped to also cultivate a better relationship between farmers and professional veterinarians. Farmers came to rely more and more on the scientific expertise of veterinarians. At the same time, with support from the federal government, the provincial government collaborated with professional veterinarians to tackle livestock health challenges that threatened public health and economic growth. These anthropocentric motivations shaped the evolution of veterinary medicine.

This dissertation illustrates the non-linear development of veterinary medicine, including farmers' support for experiential learning and their resistance to, as well as the inaccessibility of, institutional knowledge. In illuminating how farmers, experiential experts, and later veterinarians adapted to changing anthropocentric priorities and mediated the ever-changing needs of humans, animals, and environments, I discovered the breakthroughs and setbacks that contributed to maintaining healthy livestock. To reduce suffering and overcome threats to public health in late nineteenth- and early-twentieth-century Ontario—where experiential and institutional modes of knowledge collided—the veterinary profession worked to advance standards, combat challenges to public health, and contribute to Canada's economic growth.

The close focus on animal histories is crucial for understanding the historical significance of efforts to combat public health challenges and promote healthy food production for a growing nation. As historical actors, livestock held a unique place. Records of their daily actions and exhibitions of their agency are limited. However, examining approaches to livestock healthcare in Ontario contributes to a better understanding of animal behaviours and experiences during the period that saw the growth of industrialized livestock agriculture. It also contributes to the scant literature on the role of animals in histories of public health, histories of science and medicine in Canada, and veterinary histories, which are more often written by historians of the United States, Britain, or France. As the first institution of its kind in North America, OVC addressed a need to establish more effective livestock healthcare practices. However, the college was criticized by its peers for accepting lower admissions requirements in favour of higher enrolment numbers. At the same time, it was criticized by farmers for lacking experiential knowledge and treatments that addressed the livestock health problems encountered in rural Ontario. Experiential practitioners and patent medicine producers challenged their efforts by providing more accessible options to rural

farming communities. While OVC transitioned to meet these criticisms, the change was slow to come and was met with resistance from some farmers.

An examination of the approaches taken by different historical actors to combat livestock health challenges reveals efforts to shape public health and develop human and veterinary medicine throughout this period. The goal was always to eliminate the spread of zoonotic diseases and reduce the occurrence of common ailments, using curative and preventive methods, and thus produce healthy food to feed a growing, increasingly urban population. Such anthropocentric motivations shaped veterinary medicine, human medicine, and public health regulations. Investigating the intersections of human and animal healthcare practices provides an enriched understanding of the interdependence between human and veterinary medicine, and highlights how advancements in healthcare have influenced overall developments in public health. Where possible, the close focus on the interdependence between animal, human, and environmental health also brought to light anthropocentric values that influenced change and the realities of balancing the health of each group for the optimized health of all.

Today, there is a high demand for human doctors, and many Ontarians struggle to access family doctors, which has created a similar predicament. Without access to doctors, some in Ontario seek knowledge elsewhere. Some doctors have reported a rise in online misinformation related to diagnosing health issues when medical care is unavailable and highlight the potential danger that these approaches may cause. Similarly, while this dissertation focuses on the past, it also illustrates the varied approaches to knowledge and its exchange at a time when veterinary services were costly, time-consuming, or difficult to access. The reluctance to fully embrace new scientific advances before experiential knowledge had time to develop is also reminiscent of what occurred during the pandemic.

Examining the period between the emergence of veterinary medicine in Canada in the mid-nineteenth century, almost a century after its development in France and Britain, and its subsequent move towards professionalization contributes to an understanding of the back-and-forth and dynamic interplay between veterinarians, experiential experts, farmers, and the state.[1] Its analysis of the push and pull factors that led to this historical development of the veterinary profession during this "in-between period" is also indicative of a non-linear, blurred development of veterinary medicine.

Where possible, I answered scholars' call to examine the documentary record of those absorbing and applying scientific, as well as experiential, knowledge on the ground, a call that is too often overlooked in the Canadian context.[2] I illustrate how farmers relied on experiential networks of knowledge exchange and initially resisted the top-down approach to disseminating institutional knowledge. By advocating for restrictions that limited experiential practitioners' legal ability to receive compensation for their work, veterinarians sought to increase their authority. However, only by simultaneously (yet, slowly) developing experiential learning curriculum and outreach services that met the economic demands of the livestock industry did veterinarians reach farmers—thereby gaining authority, which provided a foundation for present-day veterinary medicine.

Anthropocentric values were not homogeneous. Humans' appreciation for and experiences with animals varied greatly. Farmers and food industrialists valued large animals (livestock) for economic reasons. Initially, elite individuals, and later, urban individuals, also valued companion animals. Despite rising demand for small-animal practice in the 1920s and 1930s, rooted in the animal welfare movement and owner–companion animal relationships, it is clear that OVC's

[1] Joanna Swabe, *Animals, Disease and Human Society: Human-Animal Relations and the Rise of Veterinary Medicine* (London & New York: Routledge, 1999).
[2] Barbara Gates, "Ordering Nature: Revisioning Victorian Science Culture," in Bernard Lightman, *Victorian Science in Context* (Chicago: University of Chicago Press, 1997).

leadership focused on serving Canada's economy and food industry. As a result, its focus, influenced by prevailing gender ideals of the time, also limited who became veterinarians. Although some early twentieth-century values persist (for example, economic demand for healthy animals in the cattle, poultry, and swine industries), others have undergone drastic changes. Today, companion animal medicine accounts for the majority of veterinary practices and women comprise the majority of veterinary graduates.

Many of the issues related to access to veterinary medicine discussed in each chapter continue to exist today on a global scale, particularly in relation to urbanization and population growth. Despite advances made by the veterinary profession throughout the twentieth century, the Canadian state is not the only government to challenge the veterinary profession to develop in accordance with the nation's needs.[3] In urban centres, veterinarians largely chose to work in the profitable field of small animal or companion animal medicine. At the same time, rural livestock owners often lacked access to professional veterinary care. In these communities, practitioners had to choose between experiential and institutional knowledge available to them. In each case, farmers selected a combination of treatments tailored to their needs, utilizing a combination of informal and professional approaches. A limited number of veterinarians in rural communities also hindered the provincial government's oversight and enforcement of public health regulations, and sometimes, animal welfare. Also, few veterinarians were willing to work as inspectors due to the expense of veterinary school and the low salary of government inspectors.[4] Given these challenges, the veterinary profession has reacted and adapted to fundamental social, cultural, *and* economic changes over the course of the twentieth century. Today, the veterinary profession continues to react to industrial approaches to global food production, and urbanization will continue to have

[3] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 371.
[4] Jones and Koolmees, *A Concise History of Veterinary Medicine*, 371.

consequences for the profession and its practices. The growth of small animal practices also reflects the increasing number of companion animal–human relationships in today's world. The field's popularity is the result of growing animal welfare advocacy throughout the twentieth century. This sector offers financial advantages to veterinarians. However, the rise of this sector has coincided with the decline of large animal practices. Currently, there is still a demand for large animal veterinarians, similar to the need that arose in the early twentieth century. Just as the veterinary profession evolved from its origins in military necessity and adapted to the demands of the food industry, the profession must continue to evolve in response to current needs.

In the late nineteenth and early twentieth centuries, animal healthcare occurred most often in farming environments. Today, farmers and veterinarians practise large animal veterinary medicine in larger industrial barns and small animal medicine is most often practised in private clinics. Placing the environment at the forefront of these studies highlights deep-rooted differences in who practised animal healthcare and how it was practised. However, looking further at the transformation of these environments, first for healthier, sanitary environments, then for industrialized and sterile environments, would offer insight into the contamination and pollution of environments.

Expressions of animal behaviour in diagrams from popular animal health manuals and agricultural periodicals, or, if possible, records of animal behaviour from farmers themselves would lend depth to our understanding of the diverse livestock health practices of farmers and the experiences of animals themselves. Animals' lived experiences were incorporated into this dissertation where possible. However, weaving together the expressions of agency, compliance, or resistance by animals during procedures and treatments would provide an illustrative history from the animal perspective—showing the exposure to changing agricultural environments and how their experiences changed as livestock agriculture became mechanized and industrialized.

This dissertation revealed a contentious path to the professionalization of veterinary medicine. It acknowledged the interdependence of animal, human, and environmental health, as well as the tensions that arose between those with different approaches and motivations. The veterinary profession faced resistance from farmers as it sought to distinguish itself and gain authority based on its application of scientific advances. Eventually, institutional knowledge held by professional veterinarians permeated the domains of experiential knowledge. The veterinary profession adapted to pressure from farmers and governments, capitulating to economic demands that accompanied the industrialization of livestock farming. Building such bridges between institutional research and farm practices remains a focus of veterinary medicine today.[5]

The sustained focus on veterinarians' role in overcoming livestock health challenges faced by farmers, and how these challenges evolved alongside scientific advancements and the introduction of industrialized animal agriculture, uncovered livestock health realities and changes to the animal–human relationship throughout this period. By examining transformations in relationships between animals and humans, as well as those among rural and urban communities, farmers, experiential experts, professional veterinarians, and state officials, this dissertation revealed the resistance, separation, and eventual collaboration among stakeholders. The industrialization of livestock agriculture prompted shifts in economic demand and state reform, motivating the veterinary profession to evolve and adapt. Slowly, professional veterinarians' ability to organize and advocate for more power and authority assisted their efforts to overcome threats to public health. By the 1930s, the landscape of veterinary medicine had undergone a significant transformation, laying the groundwork for the field as it exists today. However, farmers' reluctance to wholeheartedly rely on veterinary services is indicative of their ongoing involvement in livestock healthcare. Farmers,

[5] Julie A. Hunt, "Building Bridges Between Research and Practice," in *Education Principles and Practice in Veterinary Medicine*, ed. Katherine Fogelberg (Hoboken, New Jersey: Wiley Blackwell, 2024), 459–469.

experiential experts, and the state continued to apply pressure on the veterinary profession throughout the rise of institutional training and the growth of veterinary authority. While the transition to professional veterinary medicine is undeniably integral to the history of animal health, it is important to recognize that these advancements did not occur in isolation; they were closely linked to the decisions and roles of farmers and experiential experts, and the back-and-forth responses from veterinarians to farmers.

Bibliography

Primary Sources

Archival Collections

Library and Archives Canada:

Canadian Customs Tariff and Excise Duties, corrected to July 1, 1913, Compiled by Michael P. McGoldrick, His Majesty's Customs, Montréal (Montréal: Morton, Phillips & Co. Publishers), Canada. Office of the Minister of Agriculture, 1919, HJ6751 A7 M24 1913

Privy Council Office Collection, RG2, Series A-1-a, vol. 1019, Access Code 90, ID: 301624

Sources Relating to Units of the Canadian Expeditionary Force: Canadian Army Veterinary Corps Records, Library and Archives Canada, Ottawa, Ontario. RG 9 III C 11

Museum of Dufferin Archives, Dufferin County:

AR-0476

CF-0091-004

CF-0164

CF-0177

CF-0178

CF-0179

CF-0210

CF-0218-006

CF-174

HH-0074

HRB-CF.0063

HRB-CF-0059

HRB-HH-0009

Grey Roots Archives, Grey County:

1966.031.004

A2019.017

Bonna Rouse Collection. A2012.084

Bruce County Museum & Cultural Centre Collection. 966-31-4

Bruce County Museum & Cultural Centre Collection. A2013.032

Owen Sound Historical Society-Izetta Fraser Collection. A2002.036

Sydney Jackson Collection. A2007.090

Simcoe County Archives:

971-36

986-46

971.36

972.5

Simcoe County Museum:

971-43

Museum of Health Care at Kingston:

Dr. Michael A. Chiong Patent Medicine Collection

Walter Friedli Collection

Rural Diary Archive, Wellington County Museum & Archives, Fergus, Ontario, Online:

Forbes Moir Diary Collection. James Bowman Diary Collection

James Bowman Diary Collection

University of Guelph Archives & Special Collections:

A. R. Colman Collection

Benjamin D. Young Transcripts Collection

C. A. Zavitz Collection

C. A.V. Barker Collection

Faculty Collection, Ontario Agricultural College Fond

George F. O. Sharpe Collection

J. S. Shepherdson Papers Collection

Ontario Veterinary College Collection

OVC Bulletin

W. J. R. Fowler Collection

Trent University Archives:

William Standen Diary, January 1879–December 1895. 87-006

Toronto Metropolitan University Archives & Special Collections:

Lorne Shields Historical Photograph Collection. 2008.002.1476

<u>Published Primary Materials</u>

Blenkinsop, Sir L. J. & J. W. Rainey. *History of the Great War Based on Official Documents: Veterinary Services*. London: His Majesty's Stationary Office, 1925.

Bryce, George. "Louis Pasteur: The Great French Scientist." Inaugural Address - Manitoba Literary Society, Convocation Hall, Manitoba College, Winnipeg, November 6, 1903. CIHM/ICMH microfiche series; no. 73706.

Clark, J. Murray. *The Reign of Law*. Toronto: University of Toronto Press, 1918.

Gardenier, Andrew A. *The Successful Stockman and Manual of Husbandry*. Springfield, Mass: The King-Richardson Co, 1903. From the private collection of Helen (Bellwood) Hanna, a resident of Stayner and later, Alliston, Ontario (Simcoe County).

Hodgins, J. E. and T. H. Haskett. *The Veterinary Science*. Toronto: Heal & Fleming, 1896, London: The Veterinary Science Company, 1897, 1905, and 1906. Rosemont: Museum of Dufferin Archives, Dufferin County, HRB-HH-0009.

Hunt, M. Stuart. *Nova Scotia's Part in The Great War*. Halifax: Nova Scotia Veteran Publishing Co. Limited, 1920.

Hunting, William. *Glanders: A Clinical Treatise.* London: H & W Brown, 1908.

Korinek, George F. *Veterinary Medicines: Their Actions, Uses, and Doses*. Veterinary Science Association of America, 1917.

King, Dan. *Quackery Unmasked: A Consideration of the Most Prominent Empirical Schemes of the Present Time, with an Enumeration of Some of the Causes Which Contribute to Their Support.* Boston: David Clapp, 1858.

Lecture Memoranda, Canadian Medical Association, London, Ontario. *The History of Inoculation and Vaccination for the Prevention and Treatment of Disease*. London, Eng, New York, Sydney, Cape Town, Milan, Shanghai, Buenos Aires, Bombay, and Montréal: Burroughs Wellcome & Co., 1913.

Linscott, T. S., F. R. Beattie, E. C. B. Hallam, and R. W. Woodsworth. *The Path of Wealth, or, Light From My Forge: A Discussion of God's Money Laws, the Relation Between Giving and Getting, Cash and Christianity*. Brantford, ON; St. John, N.B: Bradley, Garretson, 1888.

Robins, G. D. *A Study of Chronic Glanders in Man*. Montréal: Guertin Printing Company, 1906.

Robins, George Dougall. *A Study of Chronic Glanders in Man with Report of a Case: Analysis of 156 Cases Collected from the Literature and an Appendix of the Incidence of Equine and Human Glanders in Canada*. Montréal: Bibliothèque médécine vétérinaire, May, 1908.

Thompson, J. Gurnley. *The Domestic Encyclopedia, 1879. Midhurst:* Simcoe County Archives, 971.36.

Acts and Government Publications

Provincial:

"Sessional Papers," Ontario Provincial Government, no. 13 (1884).

"Sessional Papers," Ontario Provincial Government, no. 42 (1914).

Annual Report of the Commissioner of Agriculture and Public Works for the Province of Ontario on Agriculture and Arts for the Year 1872. Toronto: Hunter, Rose, 1873.

E. A. A. Grange, "An Act Respecting Veterinary Surgeons," in "Report of the Ontario Veterinary College, 1910," Toronto: The Ontario Department of Agriculture, 1911, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 15–16.

——— "An Act Respecting Veterinary Surgeons," in "Report of the Ontario Veterinary College, 1912," Toronto: The Ontario Department of Agriculture, 1913, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 24.

——— "An Act Respecting Veterinary Surgeons," in "Report of the Ontario Veterinary College, 1915," Toronto: The Ontario Department of Agriculture, 1916, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 31

——— "An Act Respecting Veterinary Surgeons. Chapter 171, R.S.O. 1914," in "Report of the Ontario Veterinary College, 1913," Toronto: The Ontario Department of Agriculture, 1914, CA F2-1-1, RE1 OVC A0009, Ontario Veterinary College Collection, University of Guelph Archives & Special Collection, Guelph, Ontario, 39.

Government of Ontario *Statutes of Ontario*, 1918, Chapter 20, Section 27.

——— *Agriculture and Arts Act—The Veterinary College*, Chapter 11, 1886.

——— *An Act Respecting the Practice of Veterinary Science*, Chapter 44, 1931.

——— *An Act Respecting Veterinary Surgeons*, 1911.

——— *An Act Respecting Veterinary Surgeons*, Chapter 30, 1895.

——— *An Act Respecting Veterinary Surgeons,* Chapter 15, 1896.

——— *An Act Respecting Veterinary Surgeons*, Chapter 184, 1897.

——— *An Act respecting Veterinary Surgeons*, Chapter 45, March 24, 1911.

——— *An Act to Amend the Veterinary Science Practice Act*, Chapter 66, 1933.

——— *An Act to Incorporate The Ontario Veterinary Association*, Chapter 80, 1879.

——— *An Act Respecting the Practice of Veterinary Science*, Chapter 51, 1920.

——— *An Amendment to the Agriculture and Arts Acts*, Chapter 23, 1871.

——— *Statutes of Ontario*, Chapter 44, Section 11, 1931.

Ontario Department of Agriculture, *Sessional Paper No. 21*, 1940.

Wells, Dalton C. *Report of the Ontario Royal Commission on Milk 1947*. Toronto: Baptist Johnson, 1947. https://archive.org/details/reportofontmilk00onta/page/n5/mode/2up.

Federal:

"Orders in Council: At the Government House Ottawa." September 8, 1906.

Canada. *House of Commons, Parliamentary Debates*.

Government of Canada, *An Act respecting Contagious Diseases affecting Animals*, CAP. XXXVII, *Statutes of Canada*, June 22, 1869.

Higgins, C. H. "Anthrax," Bulletin No. 23, Health of Animals Branch, Department of Agriculture, Ottawa, November 22, 1916.

——— "Report of the pathologist." In *Report of the Minister of Agriculture for the Dominion of Canada for the Year Ending October 31, 1903*. Ottawa: Department of Agriculture, 1904.

——— "Report of the pathologist." In *Report of the Veterinary Director General and Livestock Commissioner for the Two Years Ending March 31, 1908*. Ottawa: Department of Agriculture, 1909.

——— "Report of the pathologist." In *Report of the Veterinary Director General and Livestock Commissioner for the Year Ending March 31, 1911*. Ottawa: Department of Agriculture, 1911.

McEachran, Ducan. "Anthrax and Symptomatic Anthrax." Farmers' Bulletin No. 5. Department of Agriculture. Ottawa: Government Printing Bureau, 1907.

——— *Annual Report of the Export and Import Cattle Trade. In: Report of the Minister of Agriculture for the Dominion of Canada for the Calendar year 1885.* Ottawa: Department of Agriculture, 1886.

——— *Cattle Quarantine. In: Report of the Minister of Agriculture for the Dominion of Canada for the Calendar Year* 1892. Ottawa: Department of Agriculture, 1893.

——— *Report on Pictou and Other Cattle Diseases. In: Report of the Minister of Agriculture for the Dominion of Canada for the Calendar Year 1893*. Ottawa: Department of Agriculture, 1894.

McGee, John J. *Order in Council Containing Regulations Relating to Animals' Quarantine and Health of Animals.* Ottawa: The Government House, 1897.

Mills, James. *Ninth Annual Report of the Ontario Agricultural College and Experimental Farm, December 1883*. Toronto: Ontario Agricultural College, 1884.

O. P. A. Ferguson Papers, Department of Agriculture, 1926.

Rutherford, J. G. "Special Report on Glanders," Health of Animals Branch, Department of Agriculture Canada, September 1906.

Smith, Andrew. *Report of Ontario Cattle Quarantine. In: Report of the Minister of Agriculture of the Dominion of Canada for 1883.* Ottawa: Department of Agriculture, 1884.

Upper Canada Board of Agriculture Journal, "First Annual Report, 1851–1852," *Transactions — Toronto*, 1 (July 1855).

Watson, E. A. "Pathological Division." In *Report of the Veterinary Director General for the Year Ending March 31, 1925*. Ottawa: Department of Agriculture, 1925.

——— "Pathological Division." In *Report of the Veterinary Director General for the Year Ending March 31, 1935*. Ottawa: Department of Agriculture, 1935.

Britain:

U.K. Parliament. *Contagious Diseases Acts*. 1864, 1866, 1869.

——— *Diseases of Animals Acts*. 1894, 1896, 1903, 1909, 1910, 1922, 1924, 1925, 1927, 1935.

——— *The Sex Disqualification (Removal) Act*. Chapter 71, 1919.

United States:

United States Food and Drug Administration. *Food and Drugs Act, Notices of Judgement: Index to Nos. 10001-20000*. 1936.

Newspapers, Periodicals, and Magazines

Canada Farmer—Toronto

Evening Post of Wellington, National Library of New Zealand

Farmer's Sun

Guelph Daily Mercury

The Athens Reporter

The British Medical Journal

The Campbellton Graphic

The Canada Farmer

The Canada Gazette

The Canadian Veterinary Journal

The Dominion Medical Monthly and Ontario Medical Journal

The Farmer's Advocate

The Farmer's Advocate and Home Magazine

The Gazette

The Globe

The Ingersoll Chronicle and Canadian Dairyman

The Journal of Agriculture and Horticulture

The Lancet

The London Evening Free Press

The Public Ledger, and Newfoundland General Advertiser

The Toronto Daily Star

The Toronto World

The Waterdown Review

The Weekly Mail

Census

Statistics Canada. *Census of Canada,* 1870–71; 1880–81; 1890–91; 1911; 1921; 1931; 1941.

Department of Agriculture. "Census of Agriculture, 1871–1911 [Ontario] [Excel]." Borealis, 2023. https://doi.org/10.5683/SP3/2YVN82.

Secondary Sources

Adams, Tracey L. *Regulating Professions: The Emergence of Professional Self-Regulation in Four Canadian Provinces*. Toronto: University of Toronto Press, 2018.

Ambrose, Linda. ""Better and Happier Men and Women": The Agricultural Instruction Act, 1913–1924." *Historical Studies in Education / Revue d'histoire De l'éducation* 16, no. 2 (2004): 257–285.

Amyot, Chantal, Bianca Gendrea, and John Willis, edited by Francine Brousseau, *Special Delivery: Canada's Postal Heritage.* Fredericton: Goose Lane Editions, Canadian Museum of Civilization, & Canadian Postal Museum.

Anderson, Virginia D. *Creatures of Empire: How Domestic Animals Transformed Early America*. Oxford: Oxford University Press, 2004.

Atkins, Peter. *Liquid Materialities: A History of Milk, Science, and the Law*. London: Routledge, 2016.

Barker, C. A. V. "The Ontario Veterinary College: Temperence Street Era." *The Canadian Veterinary Journal* 16, no. 11 (November 1975): 319–328.

——— "History of Veterinary Medicine." *The Canadian Encyclopedia*, February 7, 2006, updated on December 16, 2013. https://thecanadianencyclopedia.ca/en/article/history-of-veterinary-medicine.

Barker, C. A. V. and Margaret Evans. *Century One: A History of the Ontario Veterinary Association, 1874–1974*. Guelph: Distributed by the Authors, 1976.

Barker, C. A. V. and Ian Barker. *A History of the Canadian Army Veterinary Corps in the Great World War 1914-1919 by Cecil French*. Guelph: Crest Books, 1999.

Barker, C. A. V. and T. A. Crowley. *One Voice: A History of the Canadian Veterinary Medical Association*. Ottawa: Distributed by the authors through the Canadian Veterinary Medical Association, 1989.

Bates, A. W. H., *Anti-Vivisection and the Profession of Medicine in Britain: A Social History*. London: Palgrave Macmillan, 2017.

Berdah, Delphine, and Camille Noûs. "Veterinary Expertise, Public Health, and Animal Contagion: The Control of Bovine Tuberculosis in France and Britain, 1860–196." In *Animal and Epidemic: Interspecies Entanglements in Historical Perspective*, edited by Axel Hüntelman, Christian Jaser, Mieke Roscher, Nadir Weber, vol. 2 *Animal in History*. Brill Deutschland GmbH: Böhlau, 2024.

Boden, Edward, and Anthony Andrews. Eds. *Black's Veterinary Dictionary*. 22nd Edition. London & New York: Bloomsbury, 2015.

Bourke, Joanna. "Dairywomen and Affectionate Wives: Women in the Irish Dairy Industry, 1890–1914." *The Agricultural History Review* 38, no. 2 (1990): 149–64.

Bowman, Alexander. "Dipping, Dosing, Drenching: Managing Unhealthy Beasts on British Farms." PhD diss. King's College London, 2019.

Boyd, William. "Making Meat: Science, Technology, and American Poultry Production." *Technology and Culture* 42, no. 4 (October 2001): 631–664.

Boyle, Eric. *Quack Medicine: A History of Combating Health Fraud in Twentieth-Century America*. Santa Barbara, California: Praeger, 2013.

Brodie, Alexander H. "Subscription Publishing and the Booktrade in the Eighties: The Invasion of Ontario." *Studies in Canadian Literature* 2, no. 1 (1977): 95–101.

Brown, Frederick L. *The City is More Than Human: An Animal History of Seattle*. Seattle & London: University of Washington Press, 2016.

Brown, Karen, and Daniel Gilfoyle. *Healing the Herds: Disease, Livestock Economies, and the Globalization of Veterinary Medicine.* Athens: Ohio University Press, 2010.

Carstairs, Catherine, Paige Schell, and Sheilagh Quaile. "Making the "Perfect Food" Safe: The Milk Pasteurization Debate." In *How Canadians Communicate VI: Food Promotion, Consumption, and Controversy*, edited by Charlene Elliot. Edmonton: Athabasca University Press, 2016.

Carter, K. Codell. "The Koch-Pasteur Dispute on Establishing the Cause of Anthrax." *Bulletin of the History of Medicine* 62, no. 1 (Spring 1988): 42–57.

Cavender, Anthony P., and Donald B. Ball. "Home Cures for Ailing Horses: A Case Study of Nineteenth-Century Vernacular Veterinary Medicine in Tennessee." *Agricultural History* 90, no. 3 (2016): 311–337.

Cheville, Norman F. *Pioneer Scientists and the Great Animal Plagues*. West Lafayette: Purdue University Press, 2021.

Cohen, Marjorie Griffin. "The Decline of Women in Dairying." *Histoire Sociale - Social History* 17, no. 34 (November 1984): 307–334.

——— *Women's Work: Markets, and Economic Development in Nineteenth-Century Ontario.* Toronto: University of Toronto Press, 1988.

Cooke, Kathy J. "Expertise, Book Farming, and Government Agriculture: The Origins of Agricultural Seed Certification in the United States." *Agricultural History* 76, no. 3 (July 2002): 524–545.

Cox, Lisa, Katie Anderson, and Elizabeth A Stone. "Together We Build: The OVC Student Wives' Auxiliary." *The Canadian Veterinary Journal* 57, no. 1 (2016): 32-36.

Cronon, William. *Nature's Metropolis: Chicago and the Great West.* New York: W. W. Norton, 1991.

Crosby, Alfred W. *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*. Cambridge: Cambridge University Press, 1986.

——— *The Columbian Exchange: Biological and Cultural Consequences of 1492.* Westport, CT: Greenwood Publishing Co., 1972.

——— "Virgin Soil Epidemics as a Factor in the Depopulation of the Americas." *The William and Mary Quarterly* 33 (April 1976): 289–299.

Curtis, Bruce. *The Politics of Population: State Formation, Statistics, and the Census of Canada*. Toronto, Buffalo, London: University of Toronto Press, 2001.

Davies, Megan. "Mother's Medicine: Women, Home and Health in the Peace River Region of British Columbia, Canada, 1920–40." In *Medicine in the Remote and Rural North, 1800–2000*, edited by. J. T. H. Connor and Stephen Curtis. London: Pickering & Chatto Limited, 2011 and Routledge, 2016.

Davies, Owen. "Cunning-Folk in the Medical Market-Place during the Nineteenth Century." *Medical History*, 43 (1999): 55–73.

Dean, Joanna. "Animal Matters: Bovine Smallpox Vaccine at the Connaught Laboratories and University Farm." In *Landscapes of Science*, edited by Tina Adcock. Toronto: Network in Canadian History and Environment, 2019.

——— "Guinea Pig Agnotology." In *Traces of the Animal Past: Methodological Challenges in Animal History*, edited by Jennifer Bonnell and Sean Kheraj. Calgary: University of Calgary Press, 2022.

——— "Species at Risk: *C. Tentani*, the Horse, and the Human." In *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, edited by Darcy Ingram, Christabelle Sethna, and Joanna Dean. Calgary: University of Calgary Press, 2017.

DeJohn Anderson, Virginia. *Creatures of Empire: How Domestic Animals Transformed Early America*. Oxford: Oxford University Press, 2004.

Derbyshire, J. B. *An Introduction to Canadian Veterinary History*. 2nd ed. Guelph: Department of Pathobiology, Ontario Veterinary College, 2003.

——— "Pathobiology at the Ontario Veterinary College--the First 100 Years." *The Canadian Veterinary Journal* 40, no. 10 (October 1999): 737–43.

——— "Pioneers of Canadian Veterinary Medicine." *Veterinary Heritage: Bulletin of the American Veterinary History Society* 34, no. 2 (2011): 33–40.

——— "The Eradication of Glanders in Canada." *The Canadian Veterinary Journal* 43, no. 9 (September 2002): 722–726.

Derry, Margaret. *Art and Science in Breeding: Creating Better Chickens*. Toronto: University of Toronto Press, 2012.

——— *Ontario's Cattle Kingdom: Purebred Breeders and Their World, 1870–1920*. Toronto: University of Toronto Press, 2001.

——— *Horses in Society: A Story of Animal Breeding and Marketing, 1800-1920*. Toronto: University of Toronto Press, 2006.

——— *Made to Order: The Designing of Animals*. Toronto: University of Toronto Press, 2022.

——— *Masterminding Nature: The Breeding of Animals, 1750–2010*. Toronto: University of Toronto Press, 2018.

Di Matteo, Livio. "Patterns and Determinants of Wealth Inequality in Late-Nineteenth-Century Ontario: Evidence from Census-Linked Probate Data." *Social Science History* 25, no. 3 (2001): 347–380.

Dorner, Zachary. *Merchants of Medicine: The Commerce and Coercion of Health in Britain's Long Eighteenth Century*. Chicago: University of Chicago Press, 2020.

Dua, Kirti. *Infectious diseases of farm animals.* Oxford, U.K: Alpha Science International, 2012.

Duffin, Jacalyn. *A History of Medicine: A Scandalously Short Introduction*. Toronto: University of Toronto Press, 2010.

Dukes, Thomas W. "The History of Veterinary Medicine." The Canadian Veterinary Journal 30, no. 3 (March 1989): 213.

Dukes, Thomas W., and B. Labonté, "A Hundred Years of Importation: The First Animal Quarantine Station in North America; Lévis, Québec, 1876–1982." *The Canadian Veterinary Journal* 32, no. 6 (1991): 375–81.

Dukes, Thomas W. "A Glimpse at the Canadian Army Veterinary Corps." *Veterinary History* 7, no. 3 (1993): 86–90.

——— "On the Middle Road: Queen's University's Foray into Veterinary and Comparative Medicine." *The Canadian Veterinary Journal* 48, no. 9 (2007): 947–52.

——— "That Other Branch of Medicine: An Historiography of Veterinary Medicine from a Canadian Perspective." *Canadian Bulletin of Medical History* 17, no. 1 (April 2000): 229–243.

——— "The History of Veterinary Medicine." *The Canadian Veterinary Journal* 30, no. 3 (1989): 213.

Ebejer, Andrew. ""Milking" the Consumer? Consumer Dissatisfaction and Regulatory Intervention in the Ontario Milk Industry during the Great Depression." *The Ontario Historical Society* 102, no. 1 (Spring 2010): 20–39.

Evans, Simon. "Canadian Beef for Victorian Britain." *Agricultural History* 53, no. 4 (October 1979): 748–762.

Finlay, Mark. "Hogs, Antibiotics and the Industrial Environments of Postwar Agriculture." In *Industrializing Organisms: Introducing Evolutionary History*, edited by Susan Schrepfer and Phillip Scranton. New York: Routledge, 2003.

Finnegan, Niall B. "Opportunities for Veterinarians in the Twenty-first Century," *Journal of the American Veterinary Medical Association*, 209 (1996): 215–17.

Fisher, James. *The Enclosure of Knowledge: Books, Power and Agrarian Capitalism in Britain, 1660–1800.* Cambridge: Cambridge University Press, 2022: 262.

——— "The Master Should know More: Book-Farming and the Conflict Over Agricultural Knowledge." *Cultural and Social History* 15 (no. 3): 1–17.

Gates, Barbara. "Ordering Nature: Revisioning Victorian Science Culture." In Bernard Lightman. *Victorian Science in Context*. Chicago: University of Chicago Press, 1997.

Gattinger, F. Eugene. *A Century of Challenge: A History of the Ontario Veterinary College*. Toronto: University of Toronto Press, 1962.

Glickman, L. T. "Implications of the Human/Animal Bond for Human Health and Veterinary Practice." *Journal of the American Veterinary Medical Association*, 201, no. 6 (1992): 848–851.

Greene, Ann Norton. *Horses at Work: Harnessing Power in Industrial America*. Boston: Harvard University Press, 2008.

Hardy, Anne. "Animals, Disease, and Man: Making Connections." *Perspectives in Biology and Medicine* 46, no. 2 (Spring 2003): 200–215.

Haynes, Richard P. *Animal Welfare: Competing Conceptions and Their Ethical Implications*. New York: Springer, 2008.

Hipperson, Julie. "Professional Entrepreneurs: Women Veterinary Surgeons as Small Business Owners in Interwar Britain." *Social History of Medicine* 31, no. 1 (February 2018): 122–139.

Ho, Derek, and Eve J. Lowenstein. "Fowler's Solution and the Evolution of the Use of Arsenic in Modern Medicine." *Skinmed* 14, no. 4 (August 2016): 287.

Hodgins, Jody. "Accessing Animal Health Knowledge: Popular Educators and Veterinary Science in Rural Ontario." In *Traces of the Animal Past: Methodological Challenges in Animal History*, edited by Jennifer Bonnell and Sean Kheraj. Calgary: University of Calgary Press, 2022.

Hunt, Julie A. "Building Bridges Between Research and Practice." In *Education Principles and Practice in Veterinary Medicine*, edited by Katherine Fogelberg. Hoboken, New Jersey: Wiley Blackwell, 2024.

Hustak, Carla. "Got Milk? Dirty Cows, Unfit Mothers, and Infant Mortality, 1880–1940." In *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, edited by Joanna Dean, Darcy Ingram, and Christabelle Sethna. Calgary: University of Calgary Press, 2017.

Ingram, Darcy. "Beastly Measures: Animal Welfare, Civil Society, and State Policy in Victorian Canada." *Journal of Canadian Studies* 47, no. 1 (2013): 221–52.

——— "Wild Things: Taming Canada's Animal Welfare Movement." In *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, edited by Christabelle Sethna, Joanna Dean, and Darcy Ingram. Calgary: University of Calgary Press, 2017.

Irvine, Leslie, and Jenny R. Vermilya. "Gender Work in a Feminized Profession: The Case of Veterinary Medicine." *Gender and Society* 24, no. 1 (2010): 56–82.

Isbister, John. "Agriculture, Balanced Growth, and Social Change in Central Canada since 1850: An Interpretation." In *Perspectives on Canadian Economic History,* edited by Douglas McCalla and Michael Huberman. Mississauga: Copp Clark Pitman, 1987.

Jenkins, Jane. "The Udder Side of Maritime Rights: Bovine Tuberculosis and Federal Regulatory Power in 1920s Prince Edward Island." *Acadiensis: Journal of the History of the Atlantic Region / Revue d'histoire de La Région Atlantique* 40, no. 2 (September 1, 2011): 70–93.

Johnston, Charles. *E. C. Drury: Agrarian Idealist*. Toronto: University of Toronto Press for The Ontario Historical Studies Series, 1986.

Jones, L. Meyer. *Veterinary Pharmacology and Therapeutics*, 1st ed. Ames, Iowa: The Iowa State College Press, 1953.

Jones, Susan D. *Death in a Small Package: A Short History of Anthrax*. Baltimore: Johns Hopkins University Press, 2010.

——— "Mapping a Zoonotic Disease: Anglo-American Efforts to Control Bovine Tuberculosis Before World War I." *Osiris* 19 (2004): 134.

——— *Valuing Animals: Veterinarians and Their Patients in Modern America*. Baltimore: The Johns Hopkins University Press, 2002.

Jones, Susan D., and Peter A. Koolmees. *A Concise History of Veterinary Medicine*. Cambridge: Cambridge University Press, 2022.

Karasszon, D. A. *A Concise History of Veterinary Medicine*. Budapest: Akadémiai Kiadó, 1988.

Karimi, Amin, and Nader Mosavari. "Development of Rose Bengal Test Against Mallein Test for Rapid Diagnosis of Equine Glanders." *Tropical Animal Health and Production* 51, no. 7 (2019): 1969–1974.

Katgner, Justin, Douglas Powell, Terry Crowley, and Karen Huff. "Scientific Conviction Amidst Scientific Controversy in the Transatlantic Livestock and Meat Trade." *Endeavour* 29, no. 2 (June 2005): 78–83.

Kheraj, Sean. "The Great Epizootic of 1872–73: Networks of Animal Disease in North American Urban Environments." *Environmental History* 23, no. 3 (July 2018): 495–521.

——— "Urban Environments and the Animal Nuisance: Domestic Livestock Regulation in Nineteenth-Century Canadian Cities." *Urban History Review* 44, no. 1/2 (2015): 37–55.

Kirk, R. G. W., and M. Worboys. "Medicine and Species: One Medicine, One History?" In The Oxford Handbook of the History of Medicine, edited by Mark Jackson. Oxford: Oxford University Press, 2011.

Kline, Ronald, and Trevor Pinch. "Users as Agents of Technological Change: The Social Construction of the Automobile in the Rural United States." *Technology and Culture* 37, no. 4 (1996): 763–95.

Koenig, Robert L. *The Fourth Horseman*. United States: Perseus Books Group, 2006.

Krech, Shepard. *The Ecological Indian: Myth and History*. New York: W. W. Norton, 1999.

Kumble, Julie, and Donald F. Smith. *Leaders of the Pack: Women and the Future of Veterinary Medicine*. West Lafayette, Indiana: Purdue University Press, 2017.

Langston, Nancy. *Toxic Bodies: Hormone Disruptors and the Legacy of DES*. New Haven: Yale University Press, 2011.

Lees, Peter, Wolfgang Bäumer, and Pierre-Louis Toutain. "The Decline and Fall of Materia Medica and the Rise of Pharmacology and Therapeutics in Veterinary Medicine." *Frontiers in Veterinary Science*, 8 (2022): 1–22.

Legault, B., and J. F. Prescott. ""The arch agitator": Dr. Frank W. Schofield and the Korean independence movement." *The Canadian Veterinary Journal* 50, no. 8 (2009): 865–872.

Lutwick, Suzanna M., and Larry I. Lutwick. *Beyond Anthrax*. Totowa, NJ: Humana Press, 2009.

Macdonald, Alastair A., and Colin M. Warwick. *The History of Veterinary Education in Edinburgh*. Edinburgh: Edinburgh University Press, 2023.

Markell Morantz-Sanchez, Regina. *Sympathy and Science: Women Physicians in American Medicine*. New York: Oxford University Press, 1985.

McCalla, Douglas. *Consumer in the Bush: Shopping in Rural Upper Canada*. Toronto and Montréal: McGill-Queen's University Press, 2015.

——— *Planting the Province: The Economic History of Upper Canada.* Toronto: University of Toronto Press, 1993.

McEwen, Andrew. "He Took Care of Me: The Human-Animal Bond in World War One." In *The Historical Animal*, edited by Susan Nance. New York: Syracuse University Press, 2015.

McKay, Marion. ""The tubercular cow must go": Business, Politics, and Winnipeg's Milk Supply, 1894–1922." *Canadian Bulletin of Medical History* 23. no. 2 (2006): 355–80.

McMurray, Sally. *Transforming Rural America: Dairying Families and Agricultural Change, 1820–1885*. Baltimore: The Johns Hopkins University Press, 1995.

——— "Women's Work in Agriculture: Divergent Trends in England and America, 1800 to 1930." *Comparative Studies in Society and History* 34, no. 2 (1992): 248–70.

McNeur, Catherine. *Taming Manhattan: Environmental Battles in the Antebellum City*. Cambridge, Mass: Harvard University Press, 2014.

McShane, Clay, and Joel Tarr, "The Decline of the Urban Horse in American Cities." *The Journal of Transport History* 24, no. 2 (2003): 177–198.

——— *The Horse in the City: Living Machines in the Nineteenth Century*. Baltimore: Johns Hopkins University Press, 2007.

Melville, Elinor. *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico*. Cambridge: Cambridge University Press, 1994.

Merchant, Carolyn. "The Theoretical Structure of Ecological Revolutions." *Environmental Review* 11, no. 4 (1987): 265–274.

Minuzzi, Sabrina. "'Quick to say Quack.' Medicinal Secrets from the Household to the Apothecary's Shop in Eighteenth-century Venice." *Social History of Medicine* 32, no. 1 (2017): 1–33.

Mom, Gijs P. A., and David A. Kirsch. "Technologies in Tension: Horses, Electric Trucks, and the Motorization of American Cities, 1900-1925." *Technology and Culture* 42, no. 3 (2001): 489–518.

More, Ellen S. *Restoring the Balance: Women Physicians and the Profession of Medicine, 1850-1995*. Cambridge, Massachusetts: Harvard University Press, 1999.

Mossop, Liz H. "Is It Time to Define Veterinary Professionalism?" *Journal of Veterinary Medical Education* 39, no. 1 (March 2012): 93–100.

Nance, Susan. *Entertaining Elephants: Animal Agency and the Business of the Animal Circus*. Baltimore: The Johns Hopkins University Press, 2013.

——— *Rodeo: An Animal History*. Norman: University of Oklahoma Press, 2020.

——— *The Historical Animal*. New York: Syracuse University Press, 2015.

Nash, Linda. *Inescapable Ecologies: A History of Environment, Disease, and Knowledge*. Berkeley and Los Angeles: University of California Press, 2006.

Olmstead, Alan, and Paul Rhodes. "Not on My Farm! Resistance to Bovine Tuberculosis Eradication in the United States." *The Journal of Economic History* 67, no. 3 (2007): 767–809.

Olsen, Sherry. "The Urban Horse and the Making of Montreal, 1840–1914." In *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada*, edited by Christabelle Sethna, Joanna Dean, and Darcy Ingram. Calgary: University of Calgary Press, 2017.

Patrias, Carmela. "More Menial than Housemaids? Racialized and Gendered Labour in the Fruit and Vegetable Industry of Canada's Niagara Region, 1880–1945." *Labour / Le Travail* 78 (2016): 69–104.

Paul, Ngozi P., Adriana E. Galván, Kunie Yoshinaga-Sakurai, Barry P. Rosen, and Masafumi Yoshinaga. "Arsenic in Medicine: Past, Present and Future – PMC." *Biometals* 36 (February 2022): 295–96. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8860286/.

Piper, Liza, and John Sandlos. "A Broken Frontier: Ecological Imperialism in the Canadian North." *Environmental History* 12, no. 4 (2007): 759–95.

Porter, Roy, and Dorothy Porter. "The Rise of the English Drugs Industry: The Role of Thomas Corbyn." *Medical History* 33, no. 3 (1989): 277–295.

Roelens, Janine, and Kris Inwood. ""Labouring at the Loom": A Case Study of Rural Manufacturing in Leeds County, Ontario, 1870." In *Canadian Papers in Rural History*, edited by Donald H. Akenson. Gananoque, Ontario: Langdale Press, 1990.

Romm, Aviva, Eric L Yarnell, and David Winston. "Urinary Complaints." In *Botanical Medicine for Women's Health*, edited by Aviva Romm, Mary L. Hardy, and Simon Mills. Saint Louis: Churchill Livingstone, 2010.

Rosenkrantz, Barbara Gutmann. *Public Health and the State: Changing Views in Massachusetts 1842-1936*. Cambridge, Mass.: Harvard University Press, 1972.

——— "The Trouble with Bovine Tuberculosis." *Bulletin of the History of Medicine* 59, no. 2 (June 1, 1985): 155–75.

Rothfels, Nigel. *Savages and Beasts: The Birth of the Modern Zoo Elephant Trails: A History of Animals and Cultures*. Baltimore: The Johns Hopkins University Press, 2021.

Russell, Peter A. *How Agriculture Made Canada: Farming in the Nineteenth Century*. Montréal: McGill-Queen's University Press, 2012.

Rutherford, Paul. *A Victorian Authority: The Daily Press in Late Nineteenth-Century Canada*. Toronto: University of Toronto Press, 1982.

Rutherford, Stephanie. *Villain, Vermin, Icon, Kin: Wolves and the Making of Canada*. Montréal: McGill-Queen's University Press, 2022.

Sandwell, Ruth. *Canada's Rural Majority: Households, Environments, and Economies, 1870–1940*. Toronto: University of Toronto Press, 2016.

——— *Contesting Rural Space: Land Policy and the Practices of Resettlement in Saltspring Island, 1859–1891*. Montréal and Kingston: McGill-Queen's University Press, 2005.

Sayers, C. W. "Early history of the Animal Pathology Division of Agriculture Canada." *Canadian Veterinary Journal* 24 (1983): 262–267.

Saywell, John T. *"Just call me Mitch": The Life of Mitchell F. Hepburn* (Toronto: University of Toronto Press, 1991.

Scott, James C. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed.* New Haven and London: Yale University Press, 1998.

Shanks, G. Dennis. "How World War 1 Changed Global Attitudes to War and Infectious Diseases." *The Lancet* 384, no. 9955 (2014): 1699–1707.

Sharrer, G. Terry. "The Great Glanders Epizootic, 1861–1866: A Civil War Legacy." *Agricultural History* 69, no. 1 (1995): 79–97.

Sihn, K. H. ""The 34th National Representative," Dr. Frank W. Schofield (1889–1970)." *Yonsei Medical Journal* 60, no. 4 (2019): 315–318.

Smith-Howard, Kendra. "Antibiotics and Agricultural Change: Purifying Milk and Protecting Health in the Postwar Era." *Agricultural History* 84, no. 3, (2010): 327–351.

——— *Pure Milk and Modern Medicine: An Environmental History since 1900*. Oxford: Oxford University Press, 2014.

Snow, Stephanie J. *Blessed Days of Anaesthesia: How Anaesthetics Changed the World***.** New York: Oxford University Press, 2008; online edition, Oxford Academic, October 31, 2023.

Steele, J. H. "Glanders." In *CRC Handbook Series in Zoonoses: Section A: Bacterial, Rickettsial and Mycotic Diseases*, edited by George W. Beran. Boca Raton: CRC Press, 1979.

Stortz, G. J. "A Canadian Veterinarian Overseas in the First World War." *The Canadian Veterinary Journal* 23, no. 6 (June 1982): 183–86.

Swabe, Joanna. *Animals, Disease and Human Society: Human–Animal Relations and the Rise of Veterinary Medicine*. London: Routledge, 2002.

Swart, Sandra. *Riding High – horses, humans and history in South Africa*. Johannesburg: Witwatersrand University Press, 2010.

——— *The Lion's Historian – Africa's Animal Past*. Johannesburg: Jacana Press, 2023.

Tebbel, John. *A History of Book Publishing in the United States*. Volumes 1–4. New York: R. R. Bowker Co., 1972.

Thayer, Gwyneth Anne. *Going to the Dogs: Greyhound Racing, Animal Activism, and American Popular Culture*. Lawrence, Kansas: University Press of Kansas, 2013.

Van Zandt, Kristopher E., Marek T. Greer, and H. Carl Gelhaus. "Glanders: An Overview of Infection in Humans." *Orphanet Journal of Rare Diseases* 8. no. 131 (2013): 2–7.

Varughese, Paul, and Christopher J. Rutty. "Rabies Vaccines in Canada." In *Taking the Bite Out of Rabies: The Evolution of Rabies Management in Canada*, edited by David J. Gregory and Rowland R. Tinline. Toronto: University of Toronto Press, 2020.

Verma, Amit Kumar, Mani Saminathan, Neha, Ruchi Tiwari, Kuldeep Dhama, and Shoor Vir Singh. "Glanders — A Re-Emerging Zoonotic Disease: A Review." *Journal of Biological Sciences* 14, no. 1 (January 1, 2014): 38–51.

White, Bonnie. "'What to Do with the Girls?' The Legacy of Women Farm Workers in Britain, 1919—1939." *Historical Reflections/Réflexions Historiques* 42, no. 2 (2016): 97–114.

Wilkinson, C. W. "Dr. Frank W. Schofield: Veterinarian Extraordinaire." *The Canadian Veterinary Journal* 49, no. 3 (2008): 290–291.

Wilkinson, Lise. *Animals & Disease: An Introduction to the History of Comparative Medicine*. Cambridge: Cambridge University Press, 1992.

——— "Glanders: Medicine and Veterinary Medicine in Common Pursuit of a Contagious Disease." *Medical History* 25, no. 04 (October 1981): 363–84.

Wilson, Catharine. *Being Neighbours: Cooperative Work and Rural Culture, 1830–1960*. Toronto and Montréal: McGill-Queen's University Press, 2022.

——— "Reciprocal Work Bees and the Meaning of Neighbourhood." *Canadian Historical Review* 82, no. 3 (September 2001): 431–464.

——— *Tenants in Time: Family Strategies, Land, and Liberalism in Upper Canada, 1799–1871*. Toronto and Montréal: McGill-Queen's University Press, 2009.

Woodger, Kevin, and Elizabeth A. Stone. "Equine Surgery at the Ontario Veterinary College in the Early 20th Century." *Canadian Bulletin of Medical History* 32, no. 1 (April 2015): 181–202.

——— "'One of the Boys': Women at the Ontario Veterinary College in the Twentieth Century." *Historical Studies in Education / Revue d'histoire de l'éducation*, 32, no. 1 (Spring 2020): 47–67.

——— "The Ontario Veterinary College and the Establishment of the University of Guelph." *Ontario History* 108, no. 1 (July 24, 2018): 43–63.

——— "Veterinary History - Histoire Vétérinaire: The Ontario Veterinary College after World War II: 1945–1953." *Canadian Veterinary Journal* 56, no. 4 (April 2015): 399–444.

Woodger, Kevin, Elizabeth A. Stone, and Cate Dewey, "Veterinary History - Histoire Vétérinaire: The creation of the Department of Population Medicine at the Ontario Veterinary College," *Canadian Veterinary Journal* 58, no. 4 (April 2017): 403–409.

Woods, Abigail, and Michael Bresalier. "One Health, Many Histories." *Veterinary Record* 174, no. 26 (2014): 650–54.

Woods, Abigail, Michael Bresalier, Angela Cassidy, and Rachel Mason Dentinger. *Animals and the Shaping of Modern Medicine: One Health and Its Histories*. Cham, Switzerland: Palgrave MacMillan, 2017.

Woods, Abigail. "Animals in the History of Human and Veterinary Medicine." In *The Routledge Companion to Animal-Human History*, edited by Hilda Kean and Philip Howell. London: Routledge, 2018.

——— "Between human and veterinary medicine: the history of animals and surgery." In *The Palgrave Handbook of the History of Surgery*. London: Palgrave Macmillan UK, 2017.

——— "Is Prevention Better than Cure? The Rise and Fall of Veterinary Preventive Medicine, c.1950–1980." *Social History of Medicine* 26, no. 1 (February 1, 2013): 113–131.

——— *A Manufactured Plague: The History of Foot-And-Mouth Disease in Britain*. Oxford: Earthscan, 2013.

——— "From Cruelty to Welfare: The Emergence of Farm Animal welfare in Britain, 1964–71." *Endeavour*, 36, no. 1 (2012): 14–22.

Worster, Donald. *Nature's Economy: A History of Ecological Ideas*. Cambridge: Cambridge University Press, 1994.

Wright, Donald. *The Professionalization of History in English Canada*. Toronto: University of Toronto Press, 2019.

Young, James Harvey. *The Medical Messiahs: A Social History of Health Quackery in Twentieth-Century America*. Princeton: Princeton University Press, 1992.

Dissertations

Anderson, Peter. "Field Experiments: Critical Historical Geographies of Canada's Central Experimental Farm, 1886–1938." PhD Diss., Queen's University, 2017.

Bowman, Alexander. "Dipping, Dosing, Drenching: Managing Unhealthy Beasts on British Farms." PhD Diss., King's College London, 2019.

Chaplin, Simon D. J. "John Hunter and the 'Museum Oeconomy' 1750–1800." PhD Diss., King's College London, 2009.

Cox, Lisa. "Lesion Milkshakes, Markets and Science: Bovine Tuberculosis Policy in Canada." PhD Diss., University of Guelph, 2007.

Douglas, Kathryn Ann. "Becoming Veterinarians: A Relational Account of the Experiences of Ten Women." PhD Diss., Ontario Institute for Studies of Education of the University of Toronto, 1999.

Duke, Dorothy Mary. "Agricultural Periodicals Published in Canada, 1836–1960." MA Thesis, McGill University, April 1961.

Hodgkinson, Vicki. "Divergent Rationalities and Contending Interests: Public Health in Wellington County Townships, 1882-1900." MA Thesis, University of Guelph, 2019.

Online Sources

Aaron. "Dr. Bell's Veterinary Medical Wonder - Bull Session." Forum, *Ranchers.net*. February 10–June 4, 2005, https://ranchers.net/forum/viewtopic.php?t=2313.

Augustyn, Adam. "ankylosis." *Britannica*. https://www.britannica.com/science/ankylosis.

Barker, C. A. V. The Ontario Veterinary College Alumni Association. Department of Alumni Affairs and Development Information Services, University of Guelph. *Guelph Alumnus* 17, no. 1 (Winter 1984). https://www.uoguelph.ca/theportico/archive/1984/1984winter.pdf, https://issuu.com/uofguelph/docs/1984winter.

"Bloodletting." *Encyclopedia Britannica*. https://www.britannica.com/science/bloodletting.

"Bone Spavin Fact Sheet." The Dick Vet Equine Practice, Easter Bush Veterinary Centre, The University of Edinburgh. Created: January 14, 2010, Modified: October 29, 2020. https://www.ed.ac.uk/sites/default/files/atoms/files/bone_spavin.pdf.

Campbell, S. Lynn. "CLARKE, WILLIAM FLETCHER." In *Dictionary of Canadian Biography*, vol. 13, University of Toronto/Université Laval, 1994. https://www.biographi.ca/en/bio/clarke_william_fletcher_13E.html.

Canadian Food Inspection Agency. "Equine Glanders Fact Sheet." Government of Canada. January 10, 2018. https://inspection.canada.ca/animal-health/terrestrial-animals/diseases/immediately-notifiable/fact-sheet/eng/1515109194349/1515109530734.

Canadian Food Inspection Agency. "Equine Glanders." Reference material. January 22, 2018. http://inspection.canada.ca/en/animal-health/terrestrial-animals/diseases/immediately-notifiable/equine-glanders.

Careless, J. M. S. "BROWN, GEORGE." In *Dictionary of Canadian Biography*, vol. 10, University of Toronto/Université Laval, 1972. https://www.biographi.ca/en/bio/brown_george_10E.html.

Cox, Lisa. "Veterinary Education in Canada: The Early History of the Ontario Veterinary College." *University of Guelph, Barker Veterinary Museum*. https://barkerveterinarymuseum.uoguelph.ca/veterinary-education-in-canada-the-early-history-of-the-ontario-veterinary-college/.

"caustic." *The Britannica Dictionary*. https://www.britannica.com/dictionary/caustic.

"Charles Ambrose Zavitz." *140 Faces of OAC*. September 18, 2014. https://www.uoguelph.ca/oac/140faces/charles-ambrose-zavitz.

Day, Son & Hewitt. "Our History." Loughborough, United Kingdom, https://www.daysonhewitt.co.uk/history/.

"Department History Dr. Frank Schofield." *Pathobiology, Ontario Veterinary College, University of Guelph.* September 25, 2009. https://web.archive.org/web/20090925181747/http://www.ovc.uoguelph.ca/path/schofield/.

"Dr. Bell's Veterinary Medical Wonder." Artifacts Collection. United Farmers Historical Society Archives. https://ufhsarchives.andornot.net/permalink/descriptions10871.

"Drew, George Alexander." *The Canadian Encyclopedia* (March 4, 2015). https://www.thecanadianencyclopedia.ca/en/article/george-alexander-drew.

"Exostosis." *Merriam-Webster.com Dictionary*, Merriam-Webster. https://www.merriam-webster.com/dictionary/exostosis.

Evans, A. M. "SMITH, ANDREW." In *Dictionary of Canadian Biography*, vol. 13, University of Toronto/Université Laval, 1994. https://www.biographi.ca/en/bio/smith_andrew_13E.html.

"Feed Grains for Beef Cattle." *Beef Research*. March 2024. https://www.beefresearch.ca/topics/feed-grains-for-beef-cattle/.

Field, Russell. "SAUNDERS, DYCE WILLCOCKS." In *Dictionary of Canadian Biography*, vol. 15, University of Toronto/Université Laval, 2005. http://www.biographi.ca/en/bio/saunders_dyce_willcocks_15E.html.

"Glanders," *WOAH - World Organisation for Animal Health*, n.d. https://www.woah.org/en/disease/glanders/.

Gephart, William A. "50th Anniversary Celebrated by Grahan Breeding School." *The Florida Cattleman and Livestock Journal* XXIV, no. 5 (February 1960): 20. https://ufdcimages.uflib.ufl.edu/AA/00/06/22/24/00063/00063.pdf.

Gillespie, Peter. "The Equine Hock Joint - Hock Joint of Horses. The Structure and Problems." *Vet Pro (Veterinary Professional Services).* August 9, 2017. https://vetpro.co.nz/the-hock/.

Goulet, Denis, and Frédéric Jean, "McEACHRAN, DUNCAN McNAB." In *Dictionary of Canadian Biography*, vol. 15, University of Toronto/Université Laval, 2005. https://www.biographi.ca/en/bio/mceachran_duncan_mcnab_15E.html.

Graham, Frank B. "Graham Scientific Breeding School." Pamphlet. *Graham Scientific Breeding School* (1932): Cover Page. Accessed November 21, 2024. https://www.ebay.com/itm/186234854017.

——— "Graham Scientific Breeding School: How to Make Barren Cows Breed, for Breeders and Herdsmen Only." *Graham Scientific Breeding School*. 1930 and 1931. Accessed November 21, 2024. https://www.dealswins.com/detail/284333152223.

"Graham School." Garnett, Kansas. Accessed November 21, 2024. https://grahamschoolforcattlemen.com/index.

Jones, Bruce Vivash. "Global veterinary medicine timeline." Veterinary History Society & Royal College of Veterinary Science (RCVS), *RCVS Knowledge*, July 2010. https://knowledge.rcvs.org.uk/heritage-and-history/history-of-the-veterinary-profession/global-veterinary-medicine-timeline/.

"Picture Graham Scientific Breeding School Newark, NJ." *Newark Photo Studios*. (1939). Accessed November 21, 2024. https://www.ebay.com/itm/334246154331.

"Probang." *Merriam-Webster.com Medical Dictionary*. https://www.merriam-webster.com/medical/probang.

MacDougall, Heather. "CASSIDY, JOHN JOSEPH." In *Dictionary of Canadian Biography*, vol. 14, University of Toronto/Université Laval, 1998. https://www.biographi.ca/en/bio/cassidy_john_joseph_14E.html.

MacKenzie, Ann. "BUCKLAND, GEORGE." In *Dictionary of Canadian Biography*, vol. 11, University of Toronto/Université Laval, 1982. https://www.biographi.ca/en/bio/buckland_george_11E.html.

"Mendelian inheritance." *The Britannica Dictionary*. https://www.britannica.com/science/Mendelian-inheritance.

McLeod, Susanna. "Veterinary Cure-All Turned into Quackery." *The Kingston Whig Standard*. April 29, 2020. https://www.thewhig.com/opinion/columnists/veterinary-cure-all-turned-into-quackery.

Michel, Jean-Baptiste, Yuan Kui Shen, Aviva Presser Aiden, Adrian Veres, Matthew K. Gray, William Brockman, The Google Books Team, Joseph P. Pickett, Dale Hoiberg, Dan Clancy, Peter Norvig, Jon Orwant, Steven Pinker, Martin A. Nowak, and Erez Lieberman Aiden. "Google Books Ngram Viewer – materia medica." (case-insensitive). Accessed March 10, 2025. https://books.google.com/ngrams/graph?content=materia+medica&year_start=1800&year_end=2022&corpus=en&smoothing=3.

Misener, Aaron. "How We Came to Drink Pasteurized Milk." *Arrell Food Institute*. April 2, 2016. https://arrellfoodinstitute.ca/how-we-came-to-drink-pasteurized-milk/.

Pritchard, Kyle. "'Pleased and Thankful': James Bowman's Diary, 'Rural Profiteering', and the Great War." *Historic Guelph* - Guelph Historical Society, vol. 55 (2017, updated 2023). https://www.guelphhistoricalsociety.ca/archives/historic-guelph/volume-55/pleased-and-thankful-james-bowman-s-diary-rural-profiteering-and-the-great-war.

"Quackery." *Encyclopedia Britannica*. https://www.britannica.com/science/scientific-method.

Rush, Bonnie R. "Strangles (Distemper) in Horses." *Merck Veterinary Manual*. May 2019. https://www.merckvetmanual.com/horse-owners/lung-and-airway-disorders-of-horses/strangles-distemper-in-horses.

"Snake oil." *The Britannica Dictionary*. https://www.britannica.com/dictionary/snake-oil.

Stewart, Ian. "WELD, WILLIAM." In *Dictionary of Canadian Biography*, vol. 15, University of Toronto/Université Laval, 1990.

"The Farmer's Advocate | London Public Library." London: London Public Library. Accessed January 11, 2021. http://www.londonpubliclibrary.ca/research/local-history/local-historic-sites/farmers-advocate-plaque-no-65.

"The Pros and Cons of Firing." *Horse & Hound*. January 4, 2007. https://www.horseandhound.co.uk/horse-care/vet-advice/the-pros-and-cons-of-firing-107799.

"Thermocautery (firing) of horses and racing greyhounds." *Australian Veterinary Association*. July 20, 2023. https://www.ava.com.au/policy-advocacy/policies/horse-health-and-welfare/thermocautery-of-horses/.

"Thompson, Gordon Max." Historical MLA Bios. Legislative Assembly of Prince Edward Island. https://www.assembly.pe.ca/sites/www.assembly.pe.ca/files/Historical%20MLA%20Bios/T.pdf.

"Vermifuge." *Collins Dictionary*. https://www.collinsdictionary.com/us/dictionary/english/vermifuge.

"Weekly Photo Challenge." Accession #996001342. Museum of Healthcare at Kingston—Blog. November 15, 2011. https://museumofhealthcare.blog/weekly-photo-challenge-wonder/.

World Organization for Animal Health. "Glanders and Melioidosis." Chapter 3.5.11. *OIE Terrestrial Manual*. Originally published in 1991. Last updated in 2018. https://www.woah.org/fileadmin/Home/fr/Health_standards/tahm/3.06.11_GLANDERS.pdf.

Young, Amy. "Glanders." U. C. Davis – Veterinary Medicine Centre for Equine Health, February 18, 2020. https://ceh.vetmed.ucdavis.edu/health-topics/glanders.