Chapter 3

Animal Matters: Bovine Smallpox Vaccine at the Connaught Laboratories and University Farm

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MANY OF OUR MOST VIRULENT DISEASES have emerged from the fertile intersections of human and other animal bodies. Cures also crossed the species barrier, and in the crossing carried the taint of their animal origins. At the turn of the nineteenth century, antitoxins were extracted from the blood of retired workhorses, and smallpox vaccines were produced from calves in "vaccine farms," where the purity of the product was further compromised by association with the muck of the barnyard. In 1917, when the University of Toronto opened the Connaught Laboratories and University Farm, a new modern facility for the production of serums and vaccines, they faced a nascent antivivisectionist movement from within the ranks of those opposed to vaccines. Photographs disseminated by the Connaught demonstrate the power of the visual image in managing—even erasing—the animal origins of biomedical products through an emphasis on hygiene and health.

As its cumbersome name suggests, the Connaught Laboratories and University Farm was a hybrid landscape of science, neither entirely laboratory nor entirely farm. Press coverage of its official opening drew a distinction between the hygienic, scientific, and modern laboratory (the main building) and the farm (the acreage). The laboratory was linked back to the university, 12 miles to the south in the city: "the Connaught Laboratories of the Department of Hygiene of the University of Toronto." The farm was almost incidental: "with the laboratories is a farm of 50

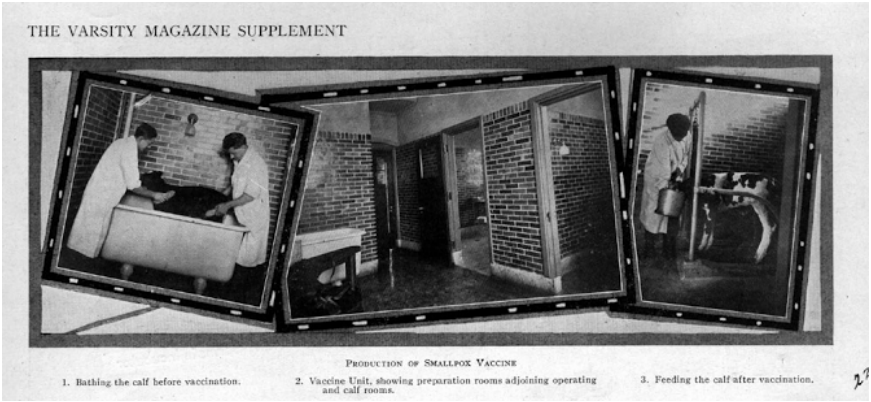

Figure 1. A collage of photographs from the Varsity Magazine Supplement*, 1918. Copy in Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto.*

acres."[1] But the distinction between laboratory and farm was difficult to maintain. The production of serums and vaccines necessitated an intimate association with animals. Behind its elegant exterior the Connaught laboratory building was very much a barn, with horse stables and calf stalls dominating the main floor, guinea pig pens and hayloft above, and paddocks behind.

The impetus and financing for the construction of the Connaught came from the wartime demand for tetanus antitoxin, but the laboratory produced a growing number of other biomedical products. This chapter will focus on the most controversial of these: bovine smallpox vaccine. Fear of the vaccine and anger at the compulsory vaccination of children led to protests across Britain and North America. Montreal residents rioted in the streets in 1875 and 1885, and Toronto was torn by debate about the compulsory vaccination of schoolchildren in 1906, and then again in 1919. While most of the anger was aimed at the intervention of the state into the body of the child and the sanctity of the home, the opponents of vaccination also raised concerns about the efficacy and safety of the vaccine and the dubious conditions under which it was produced. Some medical historians have been dismissive of antivaccinationists: Michael Bliss, for example,

argued that they were simply "wrong." But, as Paul Bator, Katharine Arnup, and Jennifer Keelan have shown, parents had good reason to be suspicious of these early vaccines.[2] This chapter focuses upon concerns about the animality of the vaccines, a topic that has received very little attention in the literature.

The bovine origins of the vaccine provoked fear and disgust as well as sympathy: fear of crossing the species barrier, disgust at the nature of the vaccine, and sympathy for the suffering of the animal. The vaccine only worked because of the similarity between human and bovine bodies. Because it breached the barrier between the human and the "animal," there were fears that other cow-like characteristics might travel with it. As R.S. Weir, secretary-treasurer of the Canadian Anti-Vaccination League, said in 1903: "The animal product, being chiefly lymph taken from the blood of the brute, has registered in it all the physical qualities of that animal."[3] In England stories about children with horns had circulated in the early years of vaccine production, and there were lingering fears that the vaccinated child might manifest signs of "the brute."

There was also disgust at the "animal matter" that made up the vaccine material. In 1902, Weir referred to the "rotten pus that has been scraped from the ulcers of a diseased beast," and in 1903 he protested a policy that would "compel every child in the land to be not only wounded, but blood poisoned also, with putrid matter from the festering sores of a diseased beast."[4] In 1906, Trustee Levee argued before the Toronto Board of Education that children's bodies should not be polluted with "animal matter."[5] The word "matter" is not as widely used today; at that time, it was redolent of pus, putrefaction, and corruption. "Animal matter" was another order of impurity, especially to a public familiar with the filth of stables and barns. The use of the term peaked at the turn of the century. Readers of Toronto newspapers were reassured that products as various as Ostermoor

mattresses and Stuart's Dyspepsia tablets were free of "animal matter and other impurities… and as safe and harmless for the child as for the parent." Even ordinary soap was suspect. "Laundry soaps are made from dead animals," read a 1915 ad, which then assured consumers that "Lawrason's Snowflake Ammonia contains no animal matter."[6]

Trustee Levee had been speaking on a motion to repeal the bylaw for the compulsory vaccination of schoolchildren. He wielded a petition between 5,000 and 10,000 signatures strong: the number varies with the source, but even the lower number was extraordinary for a city the size of Toronto. His motion passed, with only one trustee speaking against it.[7] The *Toronto Star* called on the medical profession to combat the rhetoric of antivaccination groups with "facts and arguments." A.B. Macallum, a professor of biochemistry and physiology at the University of Toronto, obliged. But his outraged letter, sent to both the *Toronto Star* and *The Globe*, made the mistake of repeating and amplifying Levee's rhetoric, referring to "filthy animal matter." [8]

The problem lay in the fact that the term "animal matter" was not entirely incorrect. Bovine smallpox vaccine was lymph taken from the pustules of calves infected with cowpox. The use of the calf was an improvement over earlier methods that had involved the transfer of lymph from one human arm to another. A calf could not transmit human diseases such as syphilis as human fluids might. To produce bovine vaccine, the calf was shaved and scarified with vaccine; five days later large vesicles formed, and when the vesicles were considered ripe they were broken and the lymph harvested. It was this material that was used to vaccinate children against smallpox.

Medical authorities attributed problems with the vaccines to poorly regulated vaccine farms. In 1902, the *Canadian Journal of Medicine and Surgery* opined that biomedical products such as virus and serum could not be produced from "worn-out horses and sickly calves" in "dirty stables or

improvised annexes to vermin infested barns." They argued that these products should be manufactured in hygienic conditions: "Healthy animals, perfect plants constructed and managed under expert supervision, and the assurance of pure cultures with entire freedom from pus organisms are the essential conditions."[9] Public health officials quietly mobilized to overcome popular opposition to vaccination. In 1914, the province of Ontario passed the *Vaccination Act*, which enabled mandatory vaccination in case of a smallpox outbreak and empowered medical officers of health to require vaccination certificates of all pupils. The University of Toronto answered the call for healthy animals and "perfect plants" by taking over vaccine production from the disreputable Ontario Vaccine Farm and setting aside one corner of the new Connaught laboratory as a vaccine unit. They launched public relations campaigns to convince Toronto parents of the purity of their vaccine, the hygiene of their laboratory, and the well-being of their calves.[10]

Robert Defries, the associate director of the Connaught Laboratories, addressed the concerns of the Canadian Anti-Vaccination League in an article in the University of Toronto's 1918 *Varsity Magazine Supplement*. Defries took care to distinguish his facility from ordinary farms: it was an "ideal" farm, with "the most modern antitoxin stable and laboratories." He explained that the production of vaccines "necessitates exacting care in the development of vaccine from healthy calves, and requires most modern equipment."[11] A collage of three photographs, titled "Production of Smallpox Vaccine," took on the real work of reassuring the public about the process (Figure 1). The first image, "Bathing a calf before vaccination," depicts a calf being washed in a large white enamel bath by two white-coated technicians in a spotless room. A second photograph, "Vaccine Unit" (enlarged in Figure 2), further emphasizes the gleaming walls of glazed brick and— again—the white enamel bath. In this photograph, the most

Figure 2. Smallpox Vaccine Unit (Preparation Room). 1918 Photograph Album, Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto.

central and the largest in the collage, the animal itself disappears from view. A third photograph, "Feeding the calf after vaccination," shows another white-coated technician, with a healthy (and clean) calf eating from a large bucket.

The photographs speak of hygiene, most obviously with the bath, but more subtly through light reflecting on glazed brick walls and tiled floors. Glazed brick is not a sign of hygiene today, and these photographs are best read in conjunction with a story about the laboratory's construction published in the industry journal, *The Contract Record*. The author takes care to explain the need for the animals' presence: "The building must include housing accommodation for animals, as well as purely laboratory arrangements." The "efforts made to secure sanitary conditions" were then

described in detail: "The walls in the stables and laboratory rooms are lined with the glazed brick dado, which can easily be kept clean. All internal angles are coved to avoid dust catching conditions and all corners are bull nosed."[12] A photograph of the immaculate stable, with gleaming tiled floor and horses almost out of sight, is positioned in the middle of the page.

This photograph was provided by the Connaught. It is one of a set of images of contented animals, clean laboratories, and lab-coated technicians that circulate through photograph albums, photographic collages, and lantern slide shows in the Connaught archives. Photographs made hygiene visible. Unlike text, which was filtered through the subjectivity of the author, a photograph had a kind of veracity: it offered itself up for independent scrutiny as a record of objective reality. Photographs also packed an emotional punch. In 1906, when the Canadian Anti-Vaccination League showed illuminated illustrations at a rally, a journalist noted that a number of people had to leave: "The cases shown were appalling, and no one could resist them as an argument against compulsory vaccination."[13] A war of images ensued: in competing pamphlets, the Provincial Board of Health depicted the horrors of smallpox, which the League countered with images of a botched vaccination.[14]

The aesthetics of the Connaught photographs also mattered. With the exception of a few awkward photographs of antitoxin horses taken before the laboratory was opened, the images the Connaught circulated were sharply focused, symmetrical, and visually appealing.[15] Arthur S. Goss, the city photographer who documented the benefits of Toronto's growing public health bureaucracy, was an artist who travelled with the Group of Seven. His photographs, like those taken at the Connaught, were beautiful. Goss may have had a hand in the Connaught's public relations campaigns. Either way, his photographs provided the context of hygienic scientific modernity in which the Connaught images were interpreted.

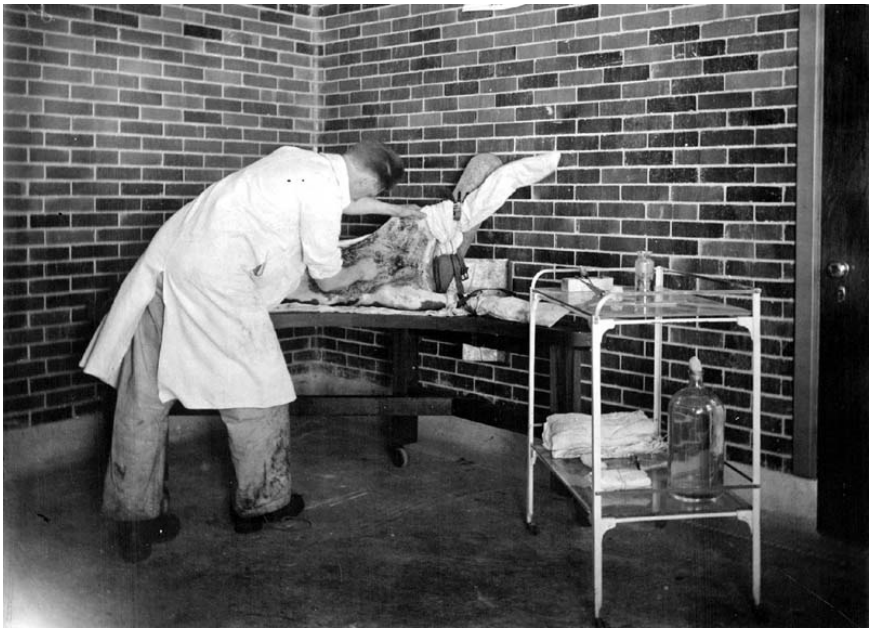

Figure 3. Photograph acc1125, Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto.

It was not just hygiene that was at stake in the Connaught collage. The photographs also assured readers of the well-being of the calf: they demonstrated that he was bathed (in an enamel tub, much as one might bathe a child) and well fed. The Connaught archives show that at least five photographs were taken of vaccine production, but only three appear in the *Varsity Magazine Supplement*. Two were omitted. The first of the absent photographs shows a calf splayed on the operating table, legs encased in white cotton, with a technician scraping the vesicles, next to a glass-topped laboratory table (Figure 3). The technician is white-coated, but dark smears of what appears to be blood can be seen on his trousers. The *Supplement* also excluded a second photograph in which the empty operating table is central and leather restraints hang to the floor (Figure 4).[16] As Timothy Pachirat has observed, the politics of sight consist of that which is hidden from view, as well as that which is seen.[17] These absent images—the

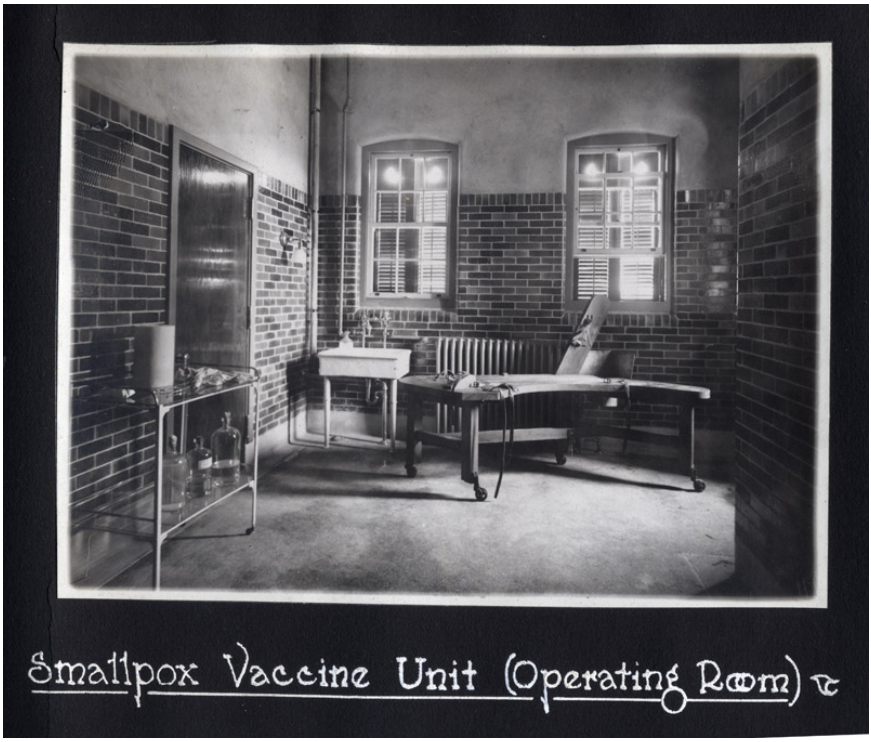

Figure 4. Smallpox Vaccine Unit (Operating Room). 1918 Photograph Album, Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto.

photograph of an animal under the knife of the lab-coated scientist and the photograph of the laboratory restraints—point to the second context in which the Connaught images operated: that of Canada's nascent antivivisectionist movement.

Canada had no antivivisectionist organization in 1918, but antivivisectionist speakers occasionally appeared at the Toronto Humane Society's meetings, and Canadians were familiar with the arguments of British and American activists.[18] Historians have described a resurgence of antivivisection sentiment in the United States and Britain after the First World War that arose out of the movement against compulsory vaccination. It appears that a similar trajectory took place in Canada.[19] The

broad and diverse antivaccinationist movement provided a natural home for antivivisectionists. Both movements had long been opposed to the emerging power of laboratory medicine, and as the number of animals used for the production of biomedical products increased, both focused upon the same landscape of science. *The Globe* reported that, of 35,512 vivisection experiments in Britain in 1917, 22,000 were for the preparation, testing and standardizing of sera, vaccines, and drugs.[20] The two movements found common cause during the First World War when Walter Hadwen, the president of the powerful British Union for the Abolition of Vivisection and a man who had himself been recruited from the ranks of antivaccinationists, campaigned against the compulsory vaccination of soldiers.

Hadwen spoke frequently in Canada. He was described in *The Globe* as an eminent physician and surgeon, "one of the greatest exponents and lecturers on the subject of serums, anti toxins, vaccines and inoculations that we have on either side on the Atlantic."[21] An article of his published in the *Ottawa Citizen* in 1918 provides some insight into his thoughts on animal matter(s), and demonstrates the ways in which antivivisectionism and antivaccinationism intersected. He shared the antivaccinationists' disgust with lymph, describing the vaccine as a "conglomeration of filth," but his article focused on the mistreatment of animals rather than the question of hygiene. He described vaccination as "the cruel process consisting of raising numerous sores by artificial means on the abdomen of the calf," decried the "lack of sympathy with the sufferings of speechless and inoffensive creatures," and called for "justice for the brute creation." Then he turned to the implications for people: experimentation on the calf, he said, was "the precursor of modern experimentation on human beings."[22]

The *Citizen* republished Hadwen's article in 1919, just as (and probably because) antivaccination debates resurfaced in Toronto.[23] In the face of a

smallpox outbreak, Dr. Charles Hastings, Toronto's medical officer of health, drew upon the new powers conferred upon him by the 1914 *Vaccination Act* to order the general vaccination of the city's population. When public protests led Toronto's mayor and city council to oppose this action, Hastings ordered the mandatory vaccination of all schoolchildren. He reassured the public that the Connaught vaccines were "absolutely pure." Problems arose, he said, when doctors in regular practice used vaccines from other sources.[24] This time the order stuck: pupils without a vaccination certificate were sent home in the winters of 1919 and 1920.

The Canadian Anti-Vivisection Society emerged from this moment. The Anti-Vaccination League of Canada was replaced in 1921 by two bodies: the Medical Liberty League and the Canadian Anti-Vivisection Society.[25] The new Anti-Vivisection Society had strong ties to the Toronto Humane Society, the Theosophical Society, international antivivisection organizations, and the antivaccination movement. Its membership included prominent reformers such as the cartoonist J.W. Bengough; Agnes Stanley, the sister of the late theosophist Flora MacDonald Denison; and Dr. John Fraser, a leading antivaccinationist and author of the pamphlet *Flaying the Germ Theory* (1918). Bengough had earlier provided cartoons of abused horses for the Toronto Humane Society. At the first public meeting of the Canadian Anti-Vivisection Society, he exhibited drawings of "some of the cruel and useless experiments on animals by vivisectors."[26] Similar antivivisection groups soon emerged in Montreal, Ottawa, Winnipeg, Calgary, Victoria, and Vancouver.[27]

Newspaper articles show that it took some time for the Canadian Anti-Vivisection Society to disentangle itself from the vaccination issue.[28] Bengough tried to redirect their focus. He argued at the first public meeting: "[The antivivisection] society was not concerned so much with the treatment of animals for the production of serums, but was opposed to

experiments by dissection made out of curiosity to prove generally accepted theories."[29] But the issue would not go away. It almost derailed attempts to create an antivivisectionist group in Montreal in 1922. As an annoyed journalist reported:

> The majority of those in attendance were women and several of them made bitter speeches against vaccination, or the use of any serum for the prevention of smallpox or any other disease, denouncing this practice as inhuman to the animals from whom the serums are taken, and a source of danger to those who were subjected to such treatment.[30]

Stanley, the first president of the Canadian Anti-Vivisection Society, and Fraser, the second, continued to raise the issue of vaccination.[31] It didn't help that Hadwen toured Montreal, Toronto, and Vancouver in 1922, linking vaccination and vivisection explicitly in his lectures.[32] As late as 1928, a letter to the editor of *The Globe* opposing the vaccination of children argued that "the Connaught kills calves."[33]

In light of these developments, the Connaught's decision in 1918 not to publish images of the splayed calf and empty restraints was a wise one. Animal advocates were sophisticated in their use of visual imagery, as Keri Cronin has shown, and antivivisectors had long drawn upon medical journals and laboratory manuals for a dark set of images depicting the cruelties of laboratory science.[34] These two photographs from the Connaught would have resonated with these kinds of earlier images, and would have provided visual ammunition for the nascent Canadian antivivisectionist movement.

Over time, the laboratory animal disappeared from view. The uses to which animals were put in the 1920s did not lend themselves to news stories as easily as clean calves and kind antitoxin horses. The Connaught

drew less attention to the animals in its care even as the numbers of those animals and the range of species increased exponentially. Even the name of the facility shifted subtly. News articles came to refer only to the Connaught Laboratory; references to the farm disappeared. By 1943, as Liza Piper notes in her chapter in this volume, the word "farm" was officially dropped.[35] The term resurfaced briefly in 1958 when one of the "men handling monkeys at the farm just north of Toronto" was bitten. For a moment, the facility was once again the "Connaught Laboratories research farm."[36] But the trend was toward depicting this landscape of science as a modern, scientific laboratory, rather than a vermin-infested farm. The animal became almost, but not quite, incidental.

Thanks to Chris Rutty, archivist at the Connaught Campus, Sanofi Pasteur Canada, Toronto, for his assistance. All errors are my own.

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[1] Three news clippings in the Connaught's archives used identical or very similar language to describe the laboratories, suggesting that the wording was provided by the university: "Promote Health of the Soldier" [the newspaper and exact date are unknown, as only the heading "Toronto Friday October" is visible in the clipping]; "The New Connaught Laboratories," *Canadian Journal of Medicine and Surgery* [handwritten notation "December 1917"]: 153; and "Splendid Gift to University," *Mail and Empire*, October 26, 1917. Copies of these clippings are located in Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto. An article in *The Contract Record* similarly distanced the farm from the building: "A fifty acre farm, in connection with the laboratory buildings." *The Contract Record*, October 24, 1917, 881–82. By comparison, one day before the facility's opening, a news story in the *Star* emphasized the farm through the use of the title "Toronto University's Experimental Farm." *Toronto Star,* October 25, 1917. Signage on the laboratory building also tied it back to the university in the city.

See the 1918 photograph album, CAL-1918 album B3-4, Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto.

[2] Michael Bliss, *Plague: A Story of Smallpox in Montreal* (Toronto: HarperCollins, 1991), 212. See also Martin Kaufman's dismissive account of American antivaccination movements: "The American Anti-Vaccinationists and Their Arguments," *Bulletin of the History of Medicine* 41, no. 5 (1967): 463–78. For a more sympathetic analysis, see Paul Adolphus Bator, "The Health Reformers versus the Common Canadian: The Controversy Over Compulsory Vaccination against Smallpox in Toronto and Ontario, 1900–1920," *Ontario History* 75, no. 4 (1983): 348–73; Katherine Arnup, "Victims of Vaccination?: Opposition to Compulsory Immunization in Ontario, 1900–1990," *Canadian Bulletin of Medical History* 9, no. 2 (1992): 159–76, https://doi.org/10.3138/cbmh.9.2.159; and Jennifer Keelan, "The Canadian AntiVaccination Leagues, 1872–1892" (PhD diss., University of Toronto, 2004). For Britain, see Nadja Durbach, *Bodily Matters: The Anti-Vaccination Movement in England, 1853–1907* (Durham, NC: Duke University Press, 2005) https://doi.org/10.1215/9780822386506. For the United States, see James Colgrove, "'Science in a Democracy': The Contested Status of Vaccination in the Progressive Era and the 1920s," *Isis* 96, no. 2 (2005): 167–91, https://doi.org/10.1086/431531; and Jeannette Vaught, "Materia Medica: Technology, Vaccination, and Antivivisection in Jazz Age Philadelphia," *American Quarterly* 65, no. 3 (2013): 575–94, 769, https://doi.org/10.1353/aq.2013.0037.

[3] "The Vaccination Question," *The Globe*, May 30, 1903. Dr. Alexander M. Ross had formed the Toronto Anti Compulsory Vaccination League in 1888, and had earlier written articles in response to the situation in Montreal. The Canadian Anti-Vaccination League was formed in 1900. Both groups were modelled on similar British organizations. See Bator, "The Health Reformers" and Arnup, "Victims of Vaccination?"

[4] R.S. Weir, "Compulsory Vaccination," *Toronto Daily Star,* January 9, 1902; R.S. Weir, "Letter to Editor," *The Globe*, November 11, 1904.

[5] "A War on Vaccination in the Public Schools: Petition to Abolish the Compulsion has been Signed by 10,000 Citizens, Trustees Favour the Repeal of the By-Law," *Toronto Daily Star*, February 28, 1906. The Toronto School Board had previously made vaccination compulsory for pupils in 1894. See Paul Adolphus Bator, "Saving Lives on a Wholesale Plan: Public Health Reform in the City of Toronto, 1900–1930" (PhD diss., University of Toronto, 1979), 22.

[6] Ads for Stuart's Dyspepsia tablets appeared frequently in Canadian newspapers. See, for example, *Toronto Daily Star*, December 12, 1898; December 14, 1898; December 16, 1898; March 7, 1900; May 21, 1900; February 10, 1902; March 5, 1902; March 7, 1902; and September 25, 1915. For mattresses, see *Toronto Daily Star*, October 3, 1900; November 27, 1900; and October 28, 1901. For Lawrason's Snowflake Ammonia, see *Toronto Daily Star*, September 25, 1915.

[7] "A War on Vaccination in the Public Schools." The headline of this article claims there were 10,000 signatures. Bator, "The Health Reformers," and Arnup, "Victims of Vaccination?" say there were 5,000 signatures. Both cite "Vaccination Optional Now," *Toronto Daily Star*, March 2, 1906.

[8] "'Anti-vaccination Craze.' Prof. Macallum thus describes the present agitation," *The Globe*, March 7, 1906; "Vaccine is the Remedy. Sharp Letter from Prof. Macallum in Reply to Criticisms," *Toronto Daily Star*, March 12, 1906. Macallum claimed in his letter that an antivaccinationist had said that the petition contained only 1,000 signatures.

[9] W.R. Inge Dalton, M.D., "Responsibility for the Recent Deaths from the Use of Impure Antitoxins and Vaccine Virus," *Canadian Journal of Medicine and Surgery* 11, no. 1 (January 1902): 36. Dalton was quoting an editorial from the November 18, 1901 edition of the *New York Times*.

[10] For background on vaccine farms, see W.B. Spaulding, "The Ontario Vaccine Farm, 1885–1916," *Canadian Bulletin of Medical History* 6, no. 1 (1989): 45–56, https://doi.org/10.3138/cbmh.6.1.45; and Pierrick Malissard, "'Pharming' à l'ancienne: les fermes vaccinales canadiennes," *Canadian Historical Review* 85, no. 1 (2004): 35–62, https://doi.org/10.3138/chr.85.1.35.

[11] "Connaught and Antitoxin Laboratories, University of Toronto," *The Varsity Magazine Supplement*, 1918, copy in Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto. The article is focused on the production of tetanus antitoxin. See Joanna Dean, "Species at Risk: C. Tetani, the Horse and the Human," in *Animal Metropolis: Histories of Human-Animal Relations in Urban Canada,* ed. Joanna Dean, Darcy Ingram, and Christabelle Sethna (Calgary: University of Calgary Press, 2016), 155–88, https://doi.org/10.2307/j.ctv6gqv8c.12.

[12] *The Contract Record*, October 24, 1917, 882.

[13] Bator, "The Health Reformers," 355, citing *Toronto World*, March 14, 1906. It is likely that the "illuminated illustrations" were lantern slides, a popular visual genre at this time. The Toronto Humane Society maintained a library of lantern slides on animal welfare issues, and the Connaught created a lantern slide show on antitoxins.

[14] See Bator, "The Health Reformers," 354. He cites *Vaccination in Canada: A Reply to Pamphlet Published by the Provincial Board of Health, Ontario* (Toronto: Anti Vaccination League of Canada, 1907).

[15] Guests at the Connaught's opening in 1917 were entertained with two reels of motion pictures showing work done in the laboratories. See "Duke Departs After Spending Busy Day: Opens New College Farm and Attends Banquet and University Lecture," *Toronto Daily Star,* October 26, 1917.

[16] Both photographs can be seen in the 1918 photograph album in the Sanofi Pasteur Canada (Connaught Campus) Archives, Toronto. Electronic copies are labelled CAL-1918 album-B3-4, Smallpox 1 and Smallpox 2.

[17] Timothy Pachirat, *Every Twelve Seconds: Industrialized Slaughter and the Politics of Sight* (New Haven, CT: Yale University Press, 2012).

[18] Darcy Ingram has shown that deliberate efforts were made to keep women, who made up the majority of antivivisectionists, out of the leadership of animal welfare movements in Canada. See Darcy Ingram, "Wild Things: Taming Canada's Animal Welfare Movement," in *Animal Metropolis*, 87–113, https://doi.org/10.2307/j.ctv6gqv8c.9. See also his "Beastly Measures: Animal Welfare, Civil Society, and State Policy in Victorian Canada," *Journal of Canadian*

Studies 47, no. 1 (2013): 221–52, https://doi.org/10.3138/jcs.47.1.221. Ingram notes that the Toronto Humane Society was, on occasion, willing to broach more controversial issues such as vivisection.

[19] For the United States, see Karen D. Ross, "Recruiting 'Friends of Medical Progress': Evolving Tactics in the Defense of Animal Experimentation, 1910s and 1920s," *Journal of the History of Medicine and Allied Sciences* 70, no. 3 (2015): 365–93, https://doi.org/10.1093/jhmas/jru018; Susan E. Lederer, "Political Animals: The Shaping of Biomedical Research Literature in Twentieth-Century America," *Isis* 83, no. 1 (1992): 61–79, https://doi.org/10.1086/356025; and Colgrove, "'Science in a Democracy.'" Kaufman also notes that the antivivisection movements were reported to have included many antivaccinationists. See Kaufman, "The American Anti-Vaccinationists," 470. For Britain, see Richard D. French, *Antivivisection and Medical Science in Victorian Society* (Princeton, NJ: Princeton University Press, 1975). For Canada, see J.T.H. Connor, "Cruel Knives? Vivisection and Biomedical Research in Victorian English Canada," *Canadian Bulletin of Medical History* 14, no. 1 (1997): 37–64, https://doi.org/10.3138/cbmh.14.1.37. Forty years ago, French called for more research into the links between the two groups. However, scholars continue to consider them in isolation, and references to their intersections remain perfunctory. Bator, for example, describes the Canadian Anti-Vivisection Society as an "apparent offshoot" of the Anti-Vaccination League in "The Health Reformers," 354, without referring to any sources. More research is needed to fully understand the relationship between the movements.

Very little has been written on the history of antivivisection in Canada. See Robert Edward McMillan, "The Conflict Over Animal Experimentation in Vancouver, 1950-1990" (MA thesis, University of British Columbia, 2004). See note 26 below for the relationship between the founders of the Canadian Anti-Vivisection Society and the Toronto Humane Society.

[20] "Vivisection Experiments," *The Globe,* October 18, 1918.

[21] "Cruel, Brutal, Says Lecturer of Vivisection: Dr. Walter H. Hadwen, Noted English Surgeon, Attacks Practice, Claims Public Misled," *The Globe,* September 25, 1922; "Parrying Blows in Radical Battle," *The Globe,* September 23, 1922.
[22] "Concerning the Alleged Dangers of Vivisection," *Ottawa Citizen*, August 23, 1918. For a discussion of widespread fears that experimentation on animals would lead to experimentation on humans, see Ian Miller, "Necessary Torture? Vivisection, Suffragette Force-Feeding, and Responses to Scientific Medicine in Britain c. 1870–1920," *Journal of the History of Medicine and Allied Sciences* 64, no. 3 (2009): 333–72, https://doi.org/10.1093/jhmas/jrp008.
[23] "Concerning the Dangers of Vaccination," *Ottawa Citizen*, March 26, 1919.
[24] "M.O.H. States his Faith in Vaccine Treatment," *Toronto Daily Star*, December 10, 1919. My description of these events is drawn from Arnup, "Victims of Vaccination?"
[25] The Medical Liberty League was also referred to as the Antivaccination and Medical Liberty League. The American Medical Liberty League, formed in 1918, opposed vaccination, medical licensure, isolation of contagious diseases, pure food and drug laws, the testing of cattle with tuberculin, and a host of other public health programs. See Kaufman, "The American Anti-Vaccinationists," 466.
[26] Details of the Society's founding meeting on July 4, 1921 were published in *The Canadian Theosophist*, September 15, 1921, 106. The article identifies the founding members and describes the Society's connections to the Toronto Humane Society: "Mrs. Mackay has long been associated with the Toronto Humane Society and has always intended to start an anti-vivisection society here. Mrs. Stanley is a sister of the late Mrs. Flora Macdonald Denison, and it appears that Mrs. Denison had also intended starting this work in Canada, so her sister takes up the work for her on her own account." Stanley had become associated with the American antivivisectionist movement while living in Washington for a year. See her photograph and cutline in the *Toronto Daily Star*, July 4, 1921. A Mrs. Bennett, the mother of Mrs. Allan, a founding member of the Society, had also spoken to the Toronto Humane Society about antivivisection. Finally, Bengough had earlier assisted the Toronto Humane Society with a cartoon targeting those who used the check rein with horses at the 1898 Toronto

Industrial Exhibition. See Keri J. Cronin, *Art for Animals: Visual Culture and Animal Advocacy, 1870–1914* (University Park, PA: Pennsylvania State University Press, 2018), location 3010. Bengough became the Society's third vice-president in 1923.

Other participants in the Society's founding meeting included Mr. McCausland; Miss Winterbottom; Merrill Denison, Flora Macdonald Denison's son; Mr. J. Van Eden (who became secretary-treasurer); and Miss Lilian Wisdom. Forty members attended the Society's first public meeting in August. For attendance at subsequent meetings, see, for example, "Anti-Vivisection Society Holds Its Annual Meeting," *The Globe,* February 1, 1923.

[27] Reference to the formation of a Victoria group, The Humane Education and Antivivisection Society in Canada, can be found in *The Canadian Theosophist*, November 15, 1921, 139. The fact that this was included in an item about Agnes Stanley suggests a linkage to the Canadian Anti-Vivisection Society, although the name of the Victoria organization differs slightly. Dora Kitto was secretary of the Victoria group. D. Kitto is described as speaking for the SPCA and Western Canada Anti-Vivisection Society in Victoria in *The Canadian Theosophist*, December 15, 1921, 155. In "The Conflict Over Animal Experimentation" McMillan says that a British Columbia chapter was founded in the 1920s, and that it was also known as the Humane Education and AntiVivisection Society. It then became known as the Anti-Vivisection Society of British Columbia in 1930, was inactive between 1933 and 1940, and returned in 1946 as the Animal Defence and Anti-Vivisection Society of British Columbia. For the Ottawa group (and its antivaccination position), see "Wants to Debate It," *Ottawa Citizen*, March 24, 1924.

[28] See Bator, "The Health Reformers," 353–54, for a description of Fraser's antivaccinationist work. Fraser is described in *The Canadian Theosophist,* September 15, 1921, 106 as having published an article, "Do Germs Cause Disease?" in the May 1919 issue of *Physical Culture Magazine*. Fraser was elected second vice-president of the Canadian Anti-Vivisection Society in 1923, and president in 1925. See "Anti-Vivisection Society Holds Its Annual Meeting."

Kaufman argues for the United States that "the societies generally took no stand on vaccination." See Kaufman, "The American Anti-Vaccinationists," 470. Ross, on the other hand, notes that the leading American antivivisectionists continued to speak on germ theory and vaccination: "As late as 1921, the President of the American Anti-Vivisection Society of Philadelphia remained unconvinced that the germ theory was anything more than a recent fad in a long line of temporarily popular medical theories: 'The physical harm being done to our race by the serums, vaccines and anti-toxins evolved from its erroneous theories and unclean practices is surpassed only by the moral destruction wrought by the doctrine that man may do evil that good may come.'" Ross, "Recruiting 'Friends of Medical Progress,'" 370.

[29] "Demand Probe of Vivisection," *The Globe*, November 16, 1921.

[30] "Anti-Vivisection League Started," *The Gazette*, April 22, 1922. Subsequent items suggest that this overlap continued. See "Vivisection had Medical Opponent…. Vaccination Figures," *The Gazette*, October 25, 1926; and "Vivisection, Some of its Byproducts," *The Gazette*, January 8, 1927.

[31] See the letter by G.A. (Mrs. Agnes) Stanley, "Vaccination," *The Globe,* August 14, 1922; "Anti-Vivisection Society Holds Its Annual Meeting"; and "Claims Vivisection Brings No Results: Speaker at Anti Meeting Makes Many Sensational Statements, Attack on Vaccination," *The Globe,* February 22, 1924. Even when the Society took up the matter of the use of dogs for the production of insulin, Agnes Stanley continued to harp on the issue of vaccines. She claimed that most doctors were not convinced of the benefits of serum therapy and that "through the inoculation the race is slowly being weakened by contraction of bovine syphilis contained in many vaccines and serums." Agnes Stanley, "Anti-Vivisection," *The Globe,* April 16, 1923.

[32] Newspapers covered Hadwen's lectures prominently: "Anti-Vivisectors were Unpopular," *The Gazette*, September 23, 1922; "Cruel, Brutal Says Lecturer of Vivisection"; "The Truth about Vivisection and Vaccination," *Vancouver Daily World*, October 4, 1922; and "Avers Serums Slew Thousands During the War," *Vancouver Daily World*, October 5, 1922. See also the advertisement "Anti-Vivisection: A free lecture will be given at the Canadian Forester's Hall," *Toronto*

Daily Star, September 21, 1922. The *Star* was not a supporter of the antivivisection movement, and their report of Hadwen's talk was positioned underneath a more prominent article titled "Facts, Figures Show the Value of Vivisection" and published on the following Monday.

[33] "The Vaccination Question," *The Globe,* February 2, 1928. The issue persisted outside of Toronto. The 1930 announcement of the creation of the new Anti-Vivisection Society in Winnipeg includes the doing away with vaccination among its objects. "Clubs," *Winnipeg Tribune*, June 24, 1930. A letter to the editor about a smallpox epidemic written by "Dora Kitto, Hon. Secretary of Canadian Antivivisection Society Victoria B.C." was published in the *Ottawa Citizen* as "Costly Epidemic" on December 30, 1942. A proposal that vaccinations be made compulsory in Calgary was met with objections by the Alberta Antivivisection and Human Education Society. See *The Lethbridge Herald*, April 26, 1950. The Animal Defence and Anti-Vivisection Society in British Columbia espoused antivaccination sentiments as late as the 1950s, arguing that vaccination was "harmful to the health and harder on the animal from which the serum is acquired." See McMillan, "The Conflict over Animal Experimentation," 8.

[34] Cronin, *Art for Animals*. See also Cronin's virtual exhibit, *Be Kind: A Visual History of Humane Education, 1880-1945*, especially the page, "Film and Lantern Slides," presented by the National Museum of Animals and Society, available at https://bekindexhibit.org/exhibition/magic-lantern-shows/.

[35] For reference exclusively to the laboratory in official announcements, see "Appointments made: Clinicians and Connaught Laboratory Staff Maintained by Endowments Chosen," *Toronto Daily Star,* July 15, 1920; and "Varsity Saves Money by Making Serums: Connaught Laboratory Carries on Big Work in Manufacture of Antitoxins," *Toronto Daily Star,* December 15, 1920. References to the farm generally refer to the acreage. See "Wade Muddy Marshes for Plant Specimens," *Toronto Daily Star,* August 13, 1924 (an account of botanizing at the farm); and "Medicos Celebrate Opening of Institute," *Toronto Daily Star,* September 17, 1930.

[36] For the monkey incident see "Monkey Bites Lab Worker," *Ottawa Citizen*, March 21, 1958. The same language is used in "Monkey Bite Very Poisonous," *Nanaimo Daily News*, March 21, 1958 and "Encephalitis Kills Toronto Man Bitten By Monkey," *Burlington Free Press*, March 22, 1958. The shift to different animal species played a role in the shifting terminology, as familiar farm animals like horses and calves were replaced by mice and monkeys, who were not naturally associated with farms.