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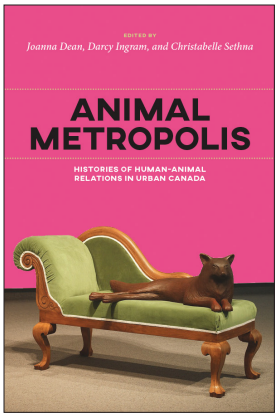

ANIMAL METROPOLIS: HISTORIES OF HUMAN-ANIMAL RELATIONS IN URBAN CANADA

Edited by Joanna Dean, Darcy Ingram, and Christabelle Sethna

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Got Milk? Dirty Cows, Unfit Mothers, and Infant Mortality, 1880–1940

Carla Hustak

In its current cultural context, milk is a site of entangled feminist, colonial, and capitalist politics. Milk travels in our time in multiple networks, congealing and drawing together human breasts, cows' udders, infant health, racialized and colonized digestive tracts, technological apparatuses, capitalist profits, nutritional science laboratories, bioengineering, and communal milk banks. Social media such as Twitter and Facebook sites have been incorporated into the circulation and formation of milk communities as milk spills into virtual space. The politics of breastfeeding have currently highlighted the place of breast milk within environmental politics. Recently, feminist concerns surrounding breast milk toxicity from the absorption of DDT have generated a possible trajectory for the advocacy of breastfeeding rights.[1] This has complicated traditional feminist agendas which have been preoccupied with concerns over mother-blaming in injunctions to maternal sacrifice or the social reprobation over the exposure of breasts in public. Significantly, feminist attention to breast milk toxicity has highlighted the intimacies of human breasts with nonhuman environmental actors. At the same time, the issue of breastfeeding has intricately entangled human and animal bodies at the level of the production of cow's milk. Both the cleanliness of cow's milk and the failure of breastfeeding have been linked to notions of unfit motherhood.

On a global capitalist scale, the demands for cow's milk and artificial formulas have been intertwined in Western capitalist markets and in

national and colonial politics. The Nestlé scandal, for example, involved the Western marketing of infant formulas in Africa and India, which resulted in infant suffering from diarrhea, malnutrition, and even death. This essentially occurred through the uneven distribution of resources given that mothers in these areas lacked sterilizing equipment, clean water, and the literacy skills to read the package directions.[2] Cows, too, have been implicated in the colonial politics of infant health insofar as the marketing of milk privileges European breeds and uses of cattle in contrast to indigenous cows and buffalo that are poor milk producers. Capitalist marketing of milk in "Got Milk" ads propagandizes its nutritional value, intertwining the provision of milk with maternal responsibility for infant health.

Milk's flow can also be tracked in the circuits of genetics as demands for milk have prompted the use of bovine growth hormones in cows and the Western hegemony of exporting milk's status as nature's perfect food in spite of the indigestibility of milk in some populations. One anthropologist has gone so far as to divide the world into lactophiles and lactophobes.[3] Mammalian maternity interlocks the bodies of human and cow mothers through the flow of milk, entangling their connectedness yet with asymmetrical costs. Cow mothers have been shown to produce more milk in the presence of calves in comparison to machine-milked cows.[4] The body of the cow mother has also been significantly altered through technological apparatuses employed to meet demands for capitalist profits on milk. Industrially milked cows, for example, live only four to five years despite a typical lifespan of twenty to twenty-five years. The fluidity of milk in social, economic, and political channels highlights the fluidity of animal and human bodies in their mutual material entanglements.

The intricate connections between cows, mothers, and infants in the circuits of milk's flow have a long history. From the late nineteenth century to the 1930s, public health reformers were at the forefront of campaigns that addressed the conditions of cows, the contamination of milk, responsible mothers, and infant mortality. These concerns specifically dovetailed with urbanization, prompting reformers to address issues of milk supply for larger urban populations and the dirt of the city in contaminating the milk supply.[5] Canadian public health reformers were part of a transnational network of reformers in Britain, the United States, and Europe who collectively addressed infant mortality and pure milk questions.

Notably, Toronto and Hamilton were among the first Canadian cities to implement milk depots to ensure a safe supply of milk. While reformers addressed concerns over milk quality, they also voiced concerns over reforming maternity, namely the insistence on the application of scientific principles to motherhood.

Historians have amply demonstrated that this period witnessed the rise of "scientific motherhood," but this story often leaves out the significance of the cow as a crucial factor in implications for breastfeeding.[6] Similarly, histories of farming and cows have left out the intimacies of cows' histories with those of infants and motherhood.[7] Moreover, the cow has been an overlooked actor in histories of sanitary reform, given that public health reformers devoted attention to the construction of barns and specifically addressed conditions of sewage disposal, ventilation, and overcrowding.[8] In a compelling history of milk, Peter Atkins has argued that milk's very ontology was called into question as scientists, public health reformers, politicians, physicians, and farmers assessed and intervened in the composition of milk. He has contended that "we may need to revise our human-centered narrative and see the cows themselves as experts."[9] While Atkins suggests that milk should be considered as a historically mutating epistemic object, I seize on milk as a productive site for challenging ontological divides between human and cow maternities. Similarly, Marilyn Yalom historicizes the breast in its shifting cultural meanings, only gesturing to cow's milk as one brief strand in this history.[10] I suggest that breasts and udders entered into important new relationships in the context of late nineteenth and early twentieth-century urbanization and milk politics. In doing so, I excavate the traces of the cow in archives of public health, scientific motherhood, and the reproductive body.[11] The space of the city presented unique and pressing challenges. Sanitary reformers approached the city as a space of contagion that intertwined the life conditions and maternity of lactating cows and lactating mothers. This chapter addresses the theme of the cow in the city as an intervention in historiographies of motherhood, infant health, agriculture, and sanitary reform.

By tracking the flow of milk, I situate udders and breasts in the wider environmental context of historically specific anxieties over urbanization and the contamination of the milk supply. Reformers' concerns over milk impurities cut across the contamination of cow bodies and the allegedly unclean breasts and feeding practices of lower-class and racialized

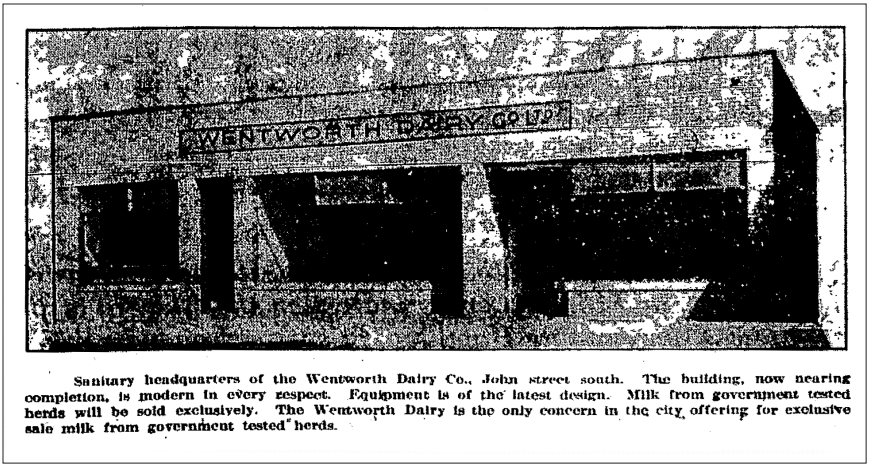
mothers. Yet this story draws attention to a specific genealogical moment in a longer environmental history that has intimately interlocked and situated breasts and udders in wider ecologies. I focus on early twentieth-century milk sanitation and urbanization as a significant chapter that should be considered in relation to other twentieth-century moments in a changing narrative of entanglements of breasts and udders at the site of technological risk and improvement of milk, whether these technologies are mechanical, industrial, chemical, or genetic. Beyond this early twentieth-century moment, milk impurities transformed into concerns over corporate chemical pollutants in the form of DDT and DES. In the 1940s and 1950s, the reproductive lives of cows and women became entangled at the site of concerns over DES toxicity in breast milk and cow's milk. Women took DES to prevent miscarriages and treat menopause, whereas cows were given DES to stimulate growth.[12] In 1962, Rachel Carson's *Silent Spring* condemned the use of DDT, noting breast milk's toxicity due to women's exposure to DDT and the contamination of cattle from feeding on plants sprayed with pesticides.[13] In the present, feminist concerns over breast milk toxicity have reached a level where one woman has described her body as a "toxic waste site," wondering whether she should breastfeed.[14] This historic changing relationship between breasts and udders highlights the significance of milk's flow for grasping the ecological context of cow/human intimacies in their mutual susceptibility to toxicity. Indeed, this historical context also highlights the changing meaning of what counts as toxicity, impurity, and environmental pollutants.

I approach the story of Canadian cows and the city through three lenses. The first lens involves the conditions of cows in the city and the spectre of the cow's health and living conditions as milk was pursued, delivered, dispersed, and consumed. The second lens turns to the centrality of the cow in breastfeeding and, more broadly, maternity advice and practices. The third lens explores how concerns over the conditions of cows were interwoven with public health concerns over infant health. This drew together human and cow maternity in the prospects and stakes of child health in the future of the nation. In the early twentieth century, as cows began to be moved out of the city, rising new technologies, food science, and pasteurization and "certified" milk debates over policing cows, milk, and farmers continued to raise the spectre of dirty cows and vulnerable, porous human bodies.

The Cow in the City: Reforming Dirty Milk and Dirty Cows

Amid late nineteenth-century processes of urbanization, cows were prominently featured among the concerns of municipal officials. As cities formed, reformers duly noted dramatic contrasts between an idyllic rural landscape of green pastures, pure air, and open space and the urban conditions of poor sewage removal, impure water, crowded space, industrial filth, noise, and pollution.[15] Reformers associated this changing landscape of the urban built environment not only with the health of humans but also the health of cows. In fact, cows increasingly came under scrutiny as not only contaminated in this urban environment but also contributing to the unsanitary conditions of the city in terms of manure and drifting odours between the homes of cow owners and their neighbours. Sanitary reformers devoted attention to the condition of barns and the proximities of cows and people. For the most part, the interest in the living conditions of cows not only mirrored the reform efforts of tenements for the lower classes but closely connected the cow's environment, pure milk, and human digestive tracts.[16] As historians have shown, the nineteenth century witnessed particular anxieties over "swill" milk, which came from cows that were fed distillery slop.[17] At the local level, there were individual private citizens who kept cows and sought their own milk licences. City officials inspected their barns and judged such conditions according to many of the same criteria as those applied to tenements.

From the late nineteenth century into the 1930s, cow's milk made the agenda of public health reformers as one of the most dangerous, contaminated foods and turned intense attention to the conditions of cows. By the mid-1920s, the federal government established food inspection regulations, bringing the body of the cow under growing surveillance. During the 1880s, Toronto passed laws to regulate dairy barns. In 1908, Ottawa had strict laws for inspecting cattle that supplied milk. In 1911, Ontario's Milk Act stipulated the inspection of herds and proper facilities for dairy production. In 1922, The *Hamilton Spectator* ran an ad to reassure Hamiltonians that the Wentworth Co. Dairy's quarters were sanitary and used milk from government-approved cows (see Figure 7.1). The passage of these laws dovetailed with growing curtailment of the presence of cows in the city. The process of urbanization introduced new issues of transportation

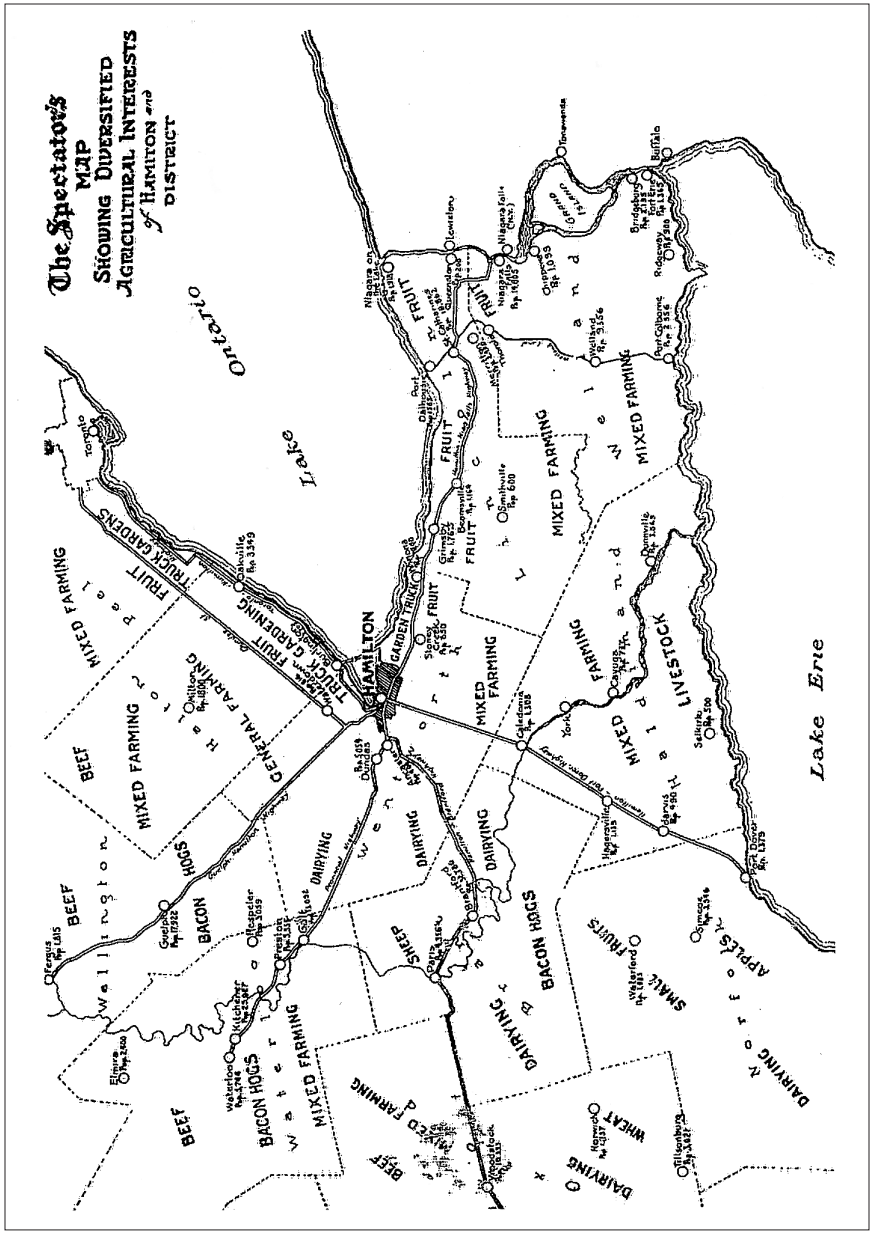


Sanitary headquarters of the Wentworth Dairy Co., John street south. The building, now nearing completion, is modern in every respect. Equipment is of the latest design. Milk from government tested herds will be sold exclusively. The Wentworth Dairy is the only concern in the city offering for exclusive sale milk from government tested herds.

7.1 Wentworth Dairy advertising its sanitary construction and selection of cows during the milk reform campaigns in 1922. Originally published 7 September 1922 in the *Hamilton Spectator*.

and heightened anxieties over the fact that conditions out of sight could not be scrutinized. The spectre of the cow moved along with milk to infant mouths in the city. This spectre haunted the practice of breastfeeding, which had declined by the 1920s.[18] Public health reformers emphasized the conditions of the cow in a shared discourse on how these conditions contributed to contaminating the milk supply and endangering infant life.

A work on *Keeping One Cow* in 1880 suggests the common practice of keeping a cow in the city.[19] According to one writer, Mrs. Bourniot of Ottawa, the average citizen could keep a cow shed in addition to raising vegetables. She specified that a cow stable would be approximately 15 by 15 feet in the backyard. Mrs. Bourniot further stipulated the proper conditions for the cow. Bourniot maintained that "she must be fed and milked at regular times, be kept thoroughly clean, have plenty of fresh air and water, and her food composed of those substances that will keep her always in good condition."[20] In the late nineteenth century, many of these conditions echoed sanitary reform campaigns for better tenements. Mrs. Bourniot also drew attention to the growing concern over contaminated milk, traced back to feeding brewers' slop or grains to cows.[21] As late as 1923, this practice of keeping one's own cow did not entirely disappear in spite of municipal



7.2 Distribution of Dairying in Hamilton and its surrounding areas in 1922. Originally published 7 September 1922 in the *Hamilton Spectator*.

officials' anxieties over cows in the city. Helen MacMurchy, recognized for her expert advice to mothers and her avid involvement in child welfare, also mentioned cows in her popular Little Blue Books. She highlighted the problem of contaminated milk but drew attention to the possibility of keeping one's own cow.[22] MacMurchy's advice drew on themes that had been circulating since the late nineteenth century over clean stables, clean udders, and healthy cows.

In late nineteenth and early twentieth-century Hamilton, municipal officials scrutinized the environmental health of cows, firmly linking the improvement of life for cows to the purity of milk and human health. Dairying was concentrated in the immediate and surrounding areas of Hamilton (see Figure 7.2). The issue of "swill" milk preoccupied public health officials. In February 1888, the *Hamilton Spectator* reported that dairymen and vendors of milk would be required to register with a medical health officer at least once a year and make "a statement . . . as to the kind of food supplied to their cows, whether of brewers' grain, distillery slops, starch factory refuse, ensilage or oil-cake."[23] Within a climate of urban reform, the case of Mrs. Corbett came before Hamilton's city council in 1889. At the time, city councillors debated the possibility of a milk bylaw. During this year, Inspector Nixon investigated Mrs. Corbett's property on Barton Street to assess whether she would be eligible for a milk licence. Mrs. Corbett was eventually granted her milk licence approximately eight months after the council met. Nixon noted the good condition of the barn, the poor drainage, the good condition of the milk house, and the implementation of city water.[24] Municipal politics took cows into account insofar as the human consumption of milk rendered the human intensely vulnerable and vitally intertwined with the conditions of the cow.

Cows entered into the social relations of neighbours in the city, prompting municipal regulations of space while highlighting the intimate proximities of people and cows. Within the next few years, municipal officials continued to inspect cow byres in Hamilton. However, others were not as fortunate as Mrs. Corbett. In April 1896, the city council discussed whether a cow should be removed from the premises of Mr. D. Evans, who also kept a sow.[25] Although Mr. Evans maintained that the premises were clean, a Medical Health Officer recommended the removal of the cow. The Council ultimately concluded that Inspector Peacock should measure the distance between the cow byre and the nearest dwelling. A

month later, Dr. Ryall came before the council to insist that cow byres be abolished or that a distance of 50 to 70 feet be enforced between the byre and the closest residence.[26] Cow byres were evidently not abolished, given that cases of cows in Hamilton persisted well beyond May 1896.[27] In November 1896, Mr. Ballentine reported on cow byres. The Committee on Cow Byres concluded that clean cows posed no danger to public health in terms of milk. However, the committee insisted that manure and disagreeable odors drifting into neighbouring doors and windows required the enforcement of a 50 to 70–foot distance between residences and cow byres. While the report also considered "humane action" to ensure that cows slept on decent bedding instead of on planks, the inspections largely reduced concerns for cow health to anticipated milk consumption.[28] In April 1897, this same Mr. Ballentine moved a motion for adopting public inspections of cow byres in conjunction with meat and milk inspections. At this same session, it was decided that the board should be permitted to publish the findings of any milk tests in the event of the milk being of an "inferior quality."[29] Although cows in the city presented contentious public health issues, as late as January 1931 city hall approved the motion to allow Acme Farmers Dairy Co. to maintain stables on Barton Street.[30]

The case of Hamilton was far from exceptional. Government reports highlighted the problem of dirty stables, dirty cows, and dirty milk on a national and often international scale. The issue of dirty milk went far beyond Ontario's borders. W.A. Wilson with the Department of Agriculture in Saskatchewan considered the dangers of milk that "turned" to traces of the cow's habitation. Wilson referred to "damp, filthy, dark, unventilated stables" and "wet and dusty milking corrals" as possible sources of contaminated milk.[31] In Saint John, New Brunswick's municipal politics, physician William Roberts who was trained at New York City's Bellevue Hospital, addressed milk pasteurization upon his re-election. Roberts attributed high infant mortality rates to impure water and milk. Across Canada, the passage of pasteurization regulations was uneven, with Saint John passing such laws in 1923, Toronto in 1915, and Hamilton in 1928.[32]

Imperial Cows: City Milk in Global Circuits of Transnational Whiteness

During this period, Canadian cows also gained attention from distant regions like Britain and South Africa. Situated within imperial circuits of sanitation and environmental health, Canadian cows were historical actors in colonizing projects and populations. The milk question was also a question of Empire. Helen MacMurchy, a Toronto physician, eugenicist, and public health reformer, positioned infant health within imperial discourses. MacMurchy claimed that "we are only now discovering that Empires and States are built up of babies."[33] Milk reformers participated in a Western hegemonic nexus of practices differentiated by the absence of milking domestic animals in areas such as indigenous America, Southeast Asia, and Africa.[34] These practices framed the milk question in terms of close ties across Canada, the United States, Britain, and Europe. As transnational public health reformers collaborated on the milk question, the whiteness of milk also materially and politically whitened Canadian cows. Duncan Ferguson, a Medical Officer in South Africa's Port Elizabeth, published a report in 1936 on behalf of the Carnegie Corporation Visitors' Committee. Corporate giant Andrew Carnegie's involvement in public health marked one form of American imperialism by claiming superior scientific knowledge to justify reform efforts. During the early twentieth century, business tycoon John D. Rockefeller was also well known for engaging in the uses of science and capital to export American influence and control.[35] In Ferguson's report, he emphasized efficiency, pasteurization, and sufficient capital for the dairy business in Canada and the United States. In the case of South Africa, however, Ferguson emphasized inadequate knowledge of pasteurization and the incompetency of milkers.[36] When Ferguson turned to the subject of the meat industry, he maintained that "as in the milk industry, the labour appeared to be of a superior type, intelligent and courteous and mostly of the white race."[37] Ferguson's report traced clean milk as a material flow that brought clean cows and white bodies into intimate imperial relations.

Canadian public health officials collaborated with American officials across borders on the question of clean milk. Public health reformers in both the United States and Canada devoted their attention to the issue of impure milk. In 1908, when Toronto reformers began launching organized

efforts for milk depots, American President Theodore Roosevelt consented to an investigation of milk under Milton Rosenau's direction. In 1910, Canadian and American milk reformers attended a Conference on Milk Problems initiated by the New York Milk Committee. Evan Perry's report to the Canadian Department of Health, *Pasteurization of Milk For Small Communities*, cited the work of S.D. Belcher, who was involved with the Medical Division of the Rochester Institute. Belcher noted poorly ventilated stables, dirty barns, urine saturated sidings, the presence of odours, dirty clothing of workers, dirty cans, dust, flies, and contaminated water.

As government officials paid close attention to cows' bodies and their homes, they vitally interlocked cow health with human health at a time when milk was seen as a dangerous liquid. Just as sanitary reformers associated clean homes with clean people, public health officials applied such logic to cows while highlighting the responsibility of farmers and milk vendors. As historians have shown in the case of sanitary reformers, cleanliness and purity amounted to a racial and class politics of the white middle class as exemplars of cleanliness.[38] Similarly, government officials who stressed the importance of clean cows also noted the incompetence of milkmen. In 1936, Duncan Ferguson's *Public Health Control* associated the bacterial contamination of milk with the failure of farmers to obtain white men to do the milking because of the early morning hours required for such work. In an earlier investigation of cows in Canada, the Milk Commission of 1909 blamed the problem of dirty milk on "a slovenly carelessness characterized by the premises and naturally also the people responsible therefor."[39] The commission visited over one hundred dairy farms, observing that in 10 per cent of the farms, the barns were dark and ventilation poor. J.H. Grisdale, the Director of Experimental Farms, also insisted that pure water was a necessary condition for cleanliness in the production of milk.[40] Public health officials cared whether cows were in the dark, had spacious accommodations, and proper ventilation.

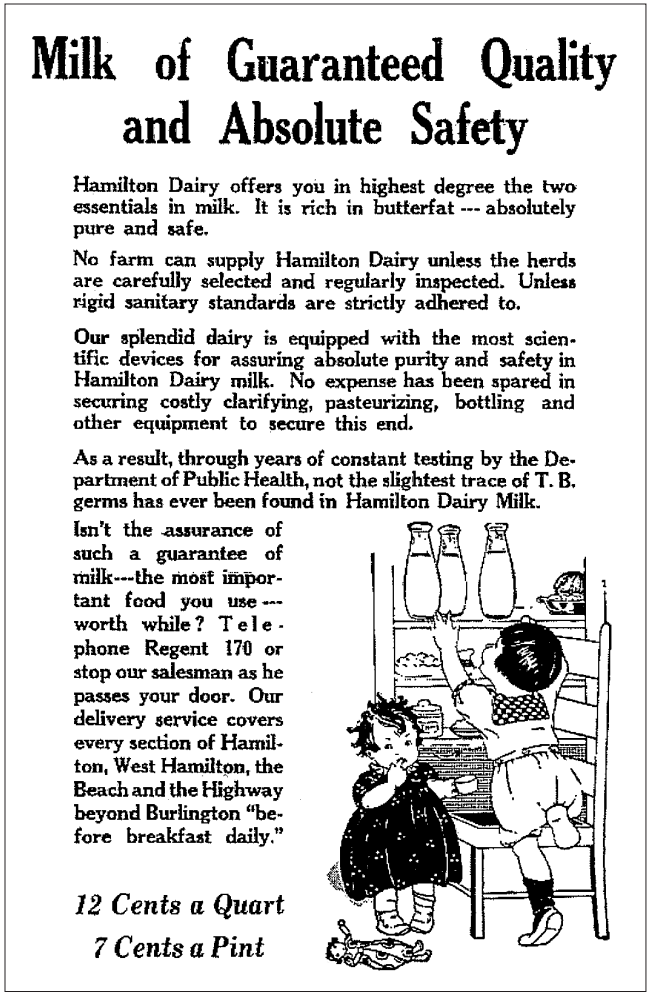
Canadian public health officials devoted attention to the environmental health of cows largely for the purposes of regulating a clean milk supply and maximizing the economic potential of the cow. In the 1909 Milk Commission Report, Frank Herns, the Chief Dairy Instructor for Western Ontario, is cited for encouraging clean and ventilated stables and proper feed in contrast to distillery slop in the interests of maximizing milk production. A few years later, Charles F. Whitley of the Department

of Agriculture attended the Dairymen's Convention of Ontario. In his report, Whitley highlighted an intimate connection between cows, owners, and profit "as the cow impresses her needs on the mind of her owner, he reaches out for more information on the best dairy practice regarding suitable and better field crops, improved conditions in the stables, and better products."[41] Yet, for some government officials, business competition could jeopardize the necessary caution required in selling milk. In 1902, J.A. Ruddick, as Minister of Agriculture, asserted that "unbusinesslike competition" among creameries could involve accepting any milk without considering its quality.[42] Ruddick attributed milk impurities to cows drinking out of muddy ponds, germs and dirt on the flanks and udders, and vile odours absorbed by the milk. For Ruddick, capitalist competition in milk production could prompt carelessness.

Where and how cows lived became pressing questions for municipal politicians, public health reformers, physicians, mothers, and infants in late nineteenth and early twentieth-century Canada. Cows emerged as prominent and significant actors within city council debates, neighbourly disputes, public health inspections, and transnational collaborations. Public health reformers' efforts to purify milk, then seen as a deadly substance, involved shifting attention to the environmental health of cows living in dingy, cramped, poorly ventilated sheds. The fate of cows involved a historically specific late nineteenth and early twentieth-century climate of sanitary reform combined with the faith in the science of bacteriology. By this time, Robert Koch's tuberculin test pervaded debates on cow's milk as part of milk's role in the era's panic over germs.[43] In this period, the goals of improving milk quality inspired a narrative of sanitary reform for dirty cows that overlapped with tenement reforms tying dirty mothers to dirty living quarters.[44] The cleanliness of cows, mothers, living quarters, and milk were intertwined in this urban narrative of the milk question.[45]

Fluid Embodiments: Milk's Spillage Across Human and Cow Maternities

As the public health campaign for better milk coincided with the rise of "scientific motherhood," the bodies of cows and mothers converged at the site of improving the quality and supply of milk. From its emergence as part of an American diet in the mid-nineteenth century, milk



7.3 Advertisement highlighting the dangers of impure milk to children. Originally published 23 October 1922 in the *Hamilton Spectator*.

was interrelated with practices of breastfeeding as a plausible substitute.[46] At a time of public health reformers' warnings of the dangers of milk, mothers who substituted cow's milk for breastfeeding could be construed as harming their children. As tactics for improving milk developed in terms of pasteurization or "certification" of herds, the notion of scientific motherhood came to encompass the education of mothers for these tasks. Some dairy companies such as Hamilton Dairy pitched ads directly associating their provision of pure milk with the welfare of children (see Figure 7.3). During this period, what came to be considered "responsible

motherhood" included the scientific techniques of the care of children in addition to the responsible breeding of fit children. Historically, the fitness and quality of milk was tied to the racial and class status of mothers, with concerns surrounding the passage of undesirable qualities to children through the flow of milk.[47] Similarly, cows were incorporated and affected by the eugenics movement, with particular breeds seen as fitter, producing better quality milk, capable of a higher yield of milk to meet growing urban demands, and, as it travelled to human mouths, integrally tied to responsible motherhood and infant health.

Eugenics shaped attention to both better mothers and better cows in the early twentieth century.[48] At a time of baby contests to display eugenic maternity and popular discussions of mate selection, breeders' associations devoting attention to pedigreed animals provided the foundational organization for American eugenics. In Canada, the problem of infant mortality raised eugenic fears of race suicide among both Anglo and French Canadians.[49] As such, cows and the quality of their milk were part of eugenic narratives of better breeding.[50] Cows were not homogeneous but carefully demarcated by their breed. Breeders separated breeds of cattle for beef from breeds of cattle for dairy with Holstein-Friesians, Jerseys, and Ayrshires deemed quality dairy breeds. The Ayrshire, a Scottish breed known for good milk yields, became available in Ontario in 1882.[51] Holstein-Friesians emerged in Ontario in the 1880s, originating in Holland. In Hamilton, dairy farmers also turned to "high-class Scotch" Shorthorns as an ideal breed for milk production (see Figure 7.4). Breeds of cattle, therefore, embodied Canada's immersion in transnational networks of the dairy industry.

To some extent, the racial politics of eugenics in Canada influenced the opinions of public health reformers in associating the purity of cow bodies and the purity of milk. J.H. Grisdale commended "the hardy and useful race of Ayrshire cattle."[52] The Ayrshire, according to Grisdale, was "one of the principal breeds of dairy cattle."[53] He described the Ayrshire as medium-sized with red, white, or brown spots. In terms of character, the Ayrshire "possess great vitality, are of a nervous disposition."[54] For Grisdale, the breeding of cattle mattered insofar as the breed could maximize milk production which, in the case of the Ayrshire, would yield good quality milk of approximately 8,000 pounds in nine or ten months. The Ayrshire, however, bore defects of small teats and the likelihood of

J. A. AND H. M. PETTIT

BREEDERS AND IMPORTERS

OF HIGH-CLASS SCOTCH

FREEMAN ONTARIO

SHORTHORNS

One of the oldest established breeding herds of Shorthorns in Canada is that started in 1870 by the late W. G. Pettit, father of the present members of the firm. His ambition at that time was to own a registered cow and a start was made with a few carefully selected females. These and their progeny constituted the herd until 1899, when the first imported blood was introduced, which consisted of an importation of eighteen heifers and two bulls which were purchased in quarantine from another importer.

Owing to the constantly increasing demand, particularly from the United States, for the products of the herd, this new blood did not remain long to do the work for which it had been intended and within a few months, owing to tempting offers, most of them had found their way into the republic to the south. As a consequence, during the following year the senior member of the firm journeyed to Scotland and selected fifty-four head to again bring the herd up to the desired standard. The keen demand existing at that time made it necessary two years later to again visit Scotland and another importation of twenty-five females were selected. These together with purchases made from time to time in this country carried the herd along until 1907, when another importation was made of ten young bulls. Following this, for a few years very little importing was done until about 1915, when the present members of the firm—having in the meantime suffered the loss of their father—again began to import.

Knowing that to secure cattle in Scotland was not an easy task, the firm secured the services of one of Scotland's foremost breeders and judges of Shorthorns and during the next six years the firm imported five hundred and fifty head of cattle, the majority of which were females. That the firm's efforts were appreciated by its fellow-breeders is demonstrated by the fact that they have been placed on farms in every part of Canada and in a great many states to the south of us.

Shorthorns have always been the prominent end of the firm's business and every effort to further its progress in Canada has been given our greatest support.

The senior and late member of the firm was for several years a director of the breeders' association in Canada, and was finally honored with the office of president. A few years later the association lost its secretary, Henry Wade, and he was asked to become secretary, a position which he held till his death. He was succeeded by his son, H. M. Pettit, who held the position for four years and then resigned and became a director and has advanced to and is now holding the position of president.

Many herds have come and gone during the half century which this herd has been in existence and the firm is to be congratulated on remaining so steadily with the breed of their choice and advancing the Pettit herd to the enviable position which it now holds.

CLIPPER PRINCE IMP. 134613

BREEDING MATRONS IN PASTURE

BREEDING MATRONS IN PASTURE

7.4 Hamilton's use of Scottish-bred Shorthorn "matrons" for pure milk. Originally published 7 September 1922 in the *Hamilton Spectator.*

beefiness. When mating cattle, Grisdale suggested selecting a bull of good milking stock but "no animal strikingly weak, or of very faulty conformation should be used even when coming from heavy milking stock."[55] Grisdale recognized the significance of breeding cattle as one factor in milk production which continued to occur in cities among the herds of milkmen. In breeding dairy cattle, cows were further tied to women's bodies through breeders' association of these breeds with femininity because of lactation.[56] As Margaret Derry has noted, breeders took into account the size of the cow's udder.[57]

While Harriet Ritvo has shown that breeding cows has a long history, the late nineteenth and early twentieth centuries introduced new intimacies between the bodies of cows and nursing mothers which converged at the site of pure milk.[58] Both the surveillance of cow's udders and women's

breasts occurred in the context of anxieties over contaminated milk from contaminated surfaces. Cows and mothers were subjected to similar scrutiny over the insistence on cleanliness for the purpose of ensuring pure milk. Helen MacMurchy's advice to mothers urged massaging breasts and sponging them with water. MacMurchy also suggested the importance of using an absorbent cotton swab and applying Castile soap to the nipples of the mother.[59] While MacMurchy also praised breastfeeding as the only way to save the baby, she also clearly insisted on keeping breasts clean. In the *Canadian Mother's Book,* MacMurchy drew from the warnings surrounding dirty milk. She told mothers that "no formula with bottles and rubber nipples, and measuring spoons and milk-sugar and sterilizing, and no one knows what else, for the Canadian Mother. These things will get dirty, and dirt in milk is death to the baby." MacMurchy's urging for clean nipples also circulated within a public health discourse shared with American reformers, and visiting nurses worried over the transmission of germs from mothers' breasts to infant mouths.[60] Breast milk, while exalted by reformers as healthy for children, could also bear the taint of contamination, which persuaded mothers to put their faith in pediatricians, nurses, and other experts.

During this period, MacMurchy's warnings occurred in the context of concerns over the effects of modernity on "civilized" breasts in the form of lactation failure, which was perceived as another urban public health issue alongside the impurity of cow's milk.[61] Public health reformers and pediatricians engaged in prominent discourses on neurasthenia, emphasizing the proneness of white middle-class women's bodies to nervousness, which registered at the level of breastfeeding. Reformers warned that overly emotional female bodies could affect the quality of breast milk. MacMurchy, for example, noted that "passion or temper or any other bad feeling should never enter the mother's room. Great emotion spoils the nursing milk and the milk secreted under such circumstances makes the child ill."[62] While pediatricians exalted the importance of breastfeeding during this period, they also suggested that breast milk could be of poor quality depending on the emotional conditions and diet of the mother.[63] These concerns over the bodies of mothers occurred within the context of exalting white upper- and middle-class mothers as paragons of cleanliness and healthy responsible motherhood.

In a report to the Department of Health titled "Canadians Need Milk," MacMurchy also specifically noted many of the same concerns voiced in agricultural and dairy reports on dirty udders, the dirty hands of milkmen and dirty pails, bottles, and utensils. While devoting attention to the proper feeding of babies, MacMurchy also noted the proper feeding of cows. She insisted that milk would be "almost a perfect food, if the cows are healthy, well fed and have some green fodder."[64] In her work on *How to Take Care of the Baby*, MacMurchy situated the cow within the broader scope of a human/nonhuman maternity in light of lactating functions.[65] She ascribed a maternal status to the cow, indicating that "the cow has been well called 'the foster mother of the human race.'"[66] Although MacMurchy emphasized the dangers of cows' milk by insisting that "the poor babies that die are nearly all bottle-fed," she nonetheless highlighted a particularly vital relationship between mothers and the consumption of milk.[67] According to MacMurchy, for mothers, milk was not only the best food but would also stimulate further milk production for the baby.[68] This accessibility to milk, however, also suggested a class politics of nutrition insofar as MacMurchy felt compelled to urge mothers that milk was affordable.[69] Cow's milk and mother's milk were integrally tied, as these bodies flowed together as cow's milk stimulated mother's milk.

As urbanization called into question the issue of pure milk, it prompted historically specific conditions that registered intimate associations of nursing breasts and cows' udders. Mastitis provided a site of physiological interconnections of nursing mothers and cows. Public health reformers' attention to clean cows to ensure clean milk inspired studies of the cow's udder. M.E. Whalley, who published a report on *Mastitis in Cows* indicated that "efforts to produce milk of good quality have led to investigations of various contributing factors, including a study of the udder. Mastitis was found to be prevalent, an insidious disease, frequently escaping detection."[70] The growth of cities, with an associated heightened demand for milk, generated profound physiological effects on cows resulting from greater capitalist efforts to maximize the udder – and thus maximize profits. This higher production of milk increased the susceptibility of cows to mastitis. Whalley, however, also noted many of the conditions discussed by sanitary reformers that infected the udder, such as improper milking and poor stable conditions.[71] A nursing cow mother, much like a nursing human mother, should have a clean udder/breast to feed the young.

According to Whalley, calves feeding from infected cows were found to contract the germs.[72] In this report, recommendations similar to those made for extracting pure milk were made because of the concern over potential mastitis in cows.[73]

"The Maternity Problem": Public Health Configurations of Unfit Mothers and Unfit Cows

The question whether milk for infants came from the mother's breast or the cow's udder ultimately intertwined women's bodies and the body of the cow in webs of social responsibility. Milk flowed across material and discursive aspects of these bodies as the spectre of dirty or clean cows, responsible or irresponsible mothers, thickened milk's social textures. At a Hamilton City Hall meeting in January 1931, councillors took note of a Board of Health report from 1909–1910. This report declared that "the milk question is but an outgrowth of a larger and more difficult problem – the maternity problem."[74] This same report referred to the necessary training of men and women to carry out the duties of parenthood. One Hamilton newspaper visually conveyed this formulation of pure milk as a maternity problem, joining cow mothers and human mothers in the sanitary or unsanitary space of the kitchen (see Figure 7.5). Such visual images circulated and reinforced popular connections between cows, mothers, lactating capacities, and pure milk.

In this period, the use of cow's milk carried implications for the suitability of the mother to the extent that choices for feeding infants became vital ones. According to the Milk Commission of 1909, most infant deaths could be attributed to mothers' decisions to artificially feed their children. Dr. James Roberts, Hamilton's Medical Health Officer, hinted at the responsibilities of mothers in attributing infant intestinal diseases to "unclean milk and improper feeding."[75] At Hamilton's City Hall, a report on the milk question for 1909–1910 was discussed in connection with grave maternal responsibility in providing pure milk.[76] This report lamented the tendency of many politicians to treat the milk question as less important than water, land, or mineral issues. It satirically claimed that such an attitude suggested that "the child murdering potencies of dirty milk must not be interfered with."[77] Leading authority on pediatric advice to mothers, L.E. Holt, also addressed the milk question. The Canadian Milk

7.5 Borden's St. Charles Milk connecting the cow to the housewife's kitchen with the provision of pure milk connecting cows and women's bodies in the space of the kitchen. Originally published 7 September 1922 in the *Hamilton Spectator.*

Commission cited the involvement of Holt in a study on the effects of pure and impure milk on infants born to mothers in tenement house dwellings in New York City.[78] Targeting mothers of tenement house dwellings, these reformers drew on assumptions that associated unfit mothers with feeding children dirty milk from dirty cows. In this period, the knowledge of milk's proper sterilization was one of the qualities of scientific motherhood, largely associated with white middle-class mothers.

Public health reformers made concerted efforts to ensure a pure milk supply in both Hamilton and Toronto. In 1908, public health reformers began to launch organized campaigns for milk reform. James Acton organized the Pure Milk League, "certified" milk was ensured at Price Farm at Erindale, and two milk stations were established in 1909. In Toronto,

J. Ross Robertson was at the forefront of implementing a pasteurization plant for the Hospital for Sick Children. Many of these milk depots also drew on the transnational connections of the milk question in looking to French "gouttes de laits" (milk stations), first developed in 1893, and the American movement for pure milk led by wealthy philanthropist, businessman, and R.H. Macy's department store owner, Nathan Straus.[79] Across England, the United States, and Canada, the education and training of maternity built on assumptions of motherhood performed in the right way by educated middle-class women. The Milk Commission in 1909 cited the cohort of "lady visitors" going to homes in England and the United States to convey knowledge of milk to mothers. In Hamilton, the Victorian Order of Nurses exemplified this tradition of "lady visitors" in milk reform.[80]

Although public health reformers drew particular attention to the milk problem as one of dirty milk and unfit mothers in the city, breastfeeding and cows also took on patriotic tones. In the early twentieth century, public health reformers like Helen MacMurchy aligned infant health with the future of the nation. Helen MacMurchy's advice to mothers cast the proper knowledge of feeding in nationalistic terms. MacMurchy dedicated her book for the mother as "the first servant of the state."[81] On the milk question, MacMurchy insisted on maternal responsibility as national responsibility, telling mothers that "you can nurse the baby, and you will do it for you know it is better for the baby, better for you and better for Canada."[82] In her book addressed to the Canadian mother, MacMurchy situated breastfeeding within concerns over beauty, insisting that "nursing will not harm the delicate mother, and, indeed, her health will be better, and the maternal organs will return to their former shape and size more quickly, when she nurses the baby."[83]

Udders and breasts entered into new relationships through early twentieth-century campaigns for pure milk. Tracing the purity of milk to its origins, public health reformers contributed to new discourses and practices which tightened connections between cow and human maternities. Public health reformers contributed to intensifying concerns surrounding impure milk. These concerns heightened the surveillance of both the body of the cow and the body of the human mother. Mothers were increasingly subjected to advice on home techniques of pasteurization or urged to pay vigilant consumer attention to "certified" milk. Moreover, the impurities

of cow's milk raised the stakes for breastfeeding for mothers who were confronted with the guilty prospects of feeding their babies contaminated milk. Cow mothers and human mothers became inextricably linked within the class, racial, and sexual politics of late nineteenth and early twentieth-century Canada. Pedigreed cows were ranked along eugenic lines partly for the quality of their milk. Similarly, early twentieth-century eugenics in Canada posited fitter mothers as those among the white middle class.[84] Pedigree and quality of milk has a long history that has entangled the body of the cow and the body of the human mother. The milk question intertwined cow and human bodies in addition to urban and rural spaces as milk spilled across these terrains.

Conclusion

Amid late nineteenth and early twentieth-century movements for pure milk in urban conditions, milk overflowed beyond human/animal maternities, rural/urban space, and barn/tenement dwellings. Framed as a dangerous and potentially lethal substance, milk signified much more than a liquid but also a site for social reform, scientific knowledge, and the entangled surveillance of human and cow mothers. Milk's history is one of the problematization and fracturing of its status as nature's perfect food. Cows and human mothers have shared this history as cow barns and tenement dwellings both came onto the agenda of sanitary reform and pure milk movements. In the case of tenements, this involved the education of mothers in addition to the facilities for providing clean milk. In the case of the intertwined physiologies of cows and mothers, clean udders and nursing nipples, in addition to potential mastitis, joined these bodies through anxieties over pure milk. These historical strands of the story of milk, cows, and human mothers linger, albeit in different forms, in the present.

Currently, milk continues to be a site entrenching the reproductive bodies of women and cows in concerns over environmental conditions, global capitalist production, and sexual politics. Intimate ties across cow and human maternities are being formed in the present. The choices between breast milk and cow's milk continue to shape issues of food security. In 2010, for example, the presence of breast milk in cheese for consumers prompted the New York Health Department to shut down the Klee

Brasserie.[85] The London *Daily Mail* reported on ice cream being sold with breast milk in it. Within the last ten years, breast milk has also undergone commodification. In 2005, Prolacta Bioscience in California sold a brand of breast milk, Prolact-22, at ten times the cost of milk banks.[86] In both Canada and the United States, what has been termed the "breast milk black market" has formed through the growing commodification and biotechnological interventions in breast milk.[87] Like cow's udders, breasts have also been commodified in corporate marketing strategies in transnational networks that capitalize on associations of the breast with white middle-class motherhood, the nuclear family, and nurturing. As Samantha King has shown, corporations like Avon have seized on breast cancer advocacy as a marketing tool.[88] King shows new circuits for the flow of milk into racial and class politics, with breast cancer campaigns privileging white middle-class women survivors, obscuring the uneven distribution of access to resources for early breast cancer detection which render some breasts more important than others. Women and cow bodies also currently share the costs of intensified capitalist production, mired in new technologies that re-articulate and re-channel the flow of milk.

In addition to concerns over consumer protection, pure milk politics have drawn cow and human maternities into the politics of biotechnologies. Cows have been implicated in the prospects and dangers of biotechnologies in terms of food security in addition to the costs to the health of the cow. Dairy farmers' use of bovine growth hormones to meet growing demands for milk production has generated concerns over pure milk. Canada, in fact, followed the European Union in banning the use of an FDA-approved Monsanto drug on cows.[89] Biotechnologies have also surfaced in efforts to manipulate sex and select for female gender to ensure the birth of a milk producer and reproducer. Recently, scientists have genetically modified cow's milk to replicate human breast milk, with the first transgenic dairy bull, Herman, created to eventually produce female cows that will possess milk with human proteins.[90] The strands of eugenics for cows continue today in the valuation of the Holstein-Friesian breed for better and higher quantity milk production.

In addition, the capitalist exploitation of the body of the cow has prompted further linkages to new concerns over pure milk, infection, and the living conditions of cows. For example, mastitis in cows has been linked to the conditions of cows hooked to electronic milking machines

in concrete stalls for most of their lives. Capitalist agendas of higher production have intertwined options between cow's milk and breastfeeding insofar as maternity leave policies impact on mothers' choices. Breast milk has also been mired in contemporary concerns over impure milk in the case of the greater exposure of lower-class and non-white women to the pollutants of corporations. The Mothers' Milk Project began with the protest of General Motors' dumping of pollutants, which resulted in traces of DDT in both Mohawk mothers' breast milk and the fat of Beluga whales.[91] On a global scale, the Western capitalist marketing of formula had confronted protests in the 1970s and 1980s. This marketing exalted Western superiority in feeding children over the resources and knowledge of poorer women in countries such as India.

Much as with organic food concerns over contaminants, advocates for pure milk have also interlocked human and cow bodies at the site of emotions and milk. One Wisconsin motto has urged the need to "speak to a cow as you would a lady," intimately tying the emotional sensitivity of cows to better milk production and their shared lactating kinship with nursing mothers. In 2009, an Ig Nobel Prize, a parody of the Nobel Prize, was awarded to Newcastle University researchers Catherine Douglas and Peter Rowlinson for their findings on improved milk production by cows that are given names and affection. Other research has extended maternal love to cows, indicating that cows kept among their calves also produce more milk.[92] As Deborah Valenze has claimed, "cow love is intimately tied to milk history and always has been."[93] Of course, such attention to the emotional lives of cows has drawn particular connections to mothers through priorities placed on exploiting cow maternity for milk yields. In a recent condemnation of inhumane Canadian dairy practices, Olivier Berreville has discussed the emotional trauma experienced by cows and calves at early separation to ensure that milk is not wasted on the calf.[94] This diversion of cow maternal resources further resonates with the colonial politics of the drain of maternal resources of nannies from poorer countries for the benefit of white Western middle-class families. Through a shared common fluid of milk, cow and human maternities continue to flow together.

Notes

1 Maia Boswell-Penc, *Tainted Milk: Breastmilk, Feminisms, and the Politics of Environmental Degradation* (Albany: State University of New York Press, 2006). Also, see Florence Williams, *Breasts: A Natural and Unnatural History* (New York & London: W.W. Norton, 2012).

2 Greta Gaard, "Toward a Feminist Postcolonial Milk Studies," *American Quarterly* 65, no. 3 (September 2013): 604.

3 Andrea Wiley notes that Marvin Harris divided societies into lactophiles and lactophobes. See Andrea Wiley, "Milk for 'Growth': Global and Local Meanings of Milk Consumption in China, India, and the United States," *Food and Foodways: History & Culture of Human Nourishment* 19, nos. 1/2 (January–June 2011): 11–33. Wiley shows recent shifts from earlier patterns of milk consumption when milk was symbolic of US modernity and lactase impersistence in China and India shaped the lack of milk in dietary regimens. Wiley notes that milk consumption has increased in India and China, highlighting the global spread and marketing of milk drinking.

4 Gaard, "Toward a Feminist Postcolonial Milk Studies," 609.

5 Pure milk continues to be a contentious issue in contemporary concerns over organic food, specifically calls for access to raw milk. Ron Schmid has written *The Untold Story of Milk* to highlight the changing composition of milk to make a larger point to advocate for the rights to raw milk. See Ron Schmid, *The Untold Story of Milk*, rev. ed. (Washington, DC: NewTrends, 2009).

6 Rima Apple, *Perfect Motherhood: Science and Childrearing in America* (New Brunswick, NJ: Rutgers University Press, 2006); Alice Boardman Smuts, *Science in the Service of Children, 1893–1935* (New Haven, CT: Yale University Press, 2006); Jacqueline Wolf, *Don't Kill Your Baby: Public Health and the Decline of Breastfeeding in the Nineteenth and Twentieth Centuries* (Columbus: Ohio State University Press, 2001); Katherine Arnup, *Education for Motherhood: Advice for Mothers in Twentieth-Century Canada* (Toronto: University of Toronto Press, 1994).

7 See, for example, Margaret Derry, *Ontario's Cattle Kingdom: Purebred Breeders and Their World, 1870–1920* (Toronto: University of Toronto Press, 2001); Harriet Ritvo, *Noble Cows & Hybrid Zebras* (Charlottesville and London: University of Virginia Press, 2010).

8 See, for example, Megan Davies, "Night Soil, Cesspools and Smelly Hogs on the Streets: Sanitation, Race, and Governance in Early British Columbia," *Social History/Histoire sociale* 38, no. 75 (2005): 1–35; James Opp, "Re-Imaging the Moral Order of Urban Space: Religion and Photography in Winnipeg, 1900–1914," *Journal of the Canadian Historical Association* 13, no. 1 (2002): 73–93; Ruth Engs, *Clean Living Movements: American Cycles of Health Reform* (Westport, CT: Greenwood, 2000); John Duffy, *The Sanitarians: A History of American Public Health* (Urbana: University of Illinois Press, 1990).

9 Peter Atkins, *Liquid Materialities: A History of Milk, Science, and the Law* (Burlington, VT: Ashgate, 2010), 113.

10 Marilyn Yalom, *A History of the Breast* (New York: Alfred A. Knopf, 1997).

11 On the methodology of pursuing animal history in the archives and the concept of "trace," see Etienne Benson, "Animal Writes: Historiography, Disciplinarity, and the Animal Trace," in *Making Animal Meaning*, ed. Linda Kalof and Georgina M. Montgomery (East Lansing: Michigan State University Press, 2011), 3–16. Also, see Susan J. Bearson and Mary Weismantel, "Does 'The Animal' Exist? Toward a Theory of Social Life with Animals," in *Beastly Natures: Animals, Humans and the Study of History*, ed. Dorothee Brantz (Charlottesville: University of Virginia Press, 2010), 17–37.

12 Nancy Langston, *Toxic Bodies: Hormone Disruptors and the Legacy of DES* (New Haven, CT: Yale University Press, 2010).

13 Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin 1962), 23, 159, 168–69.

14 Langston, *Toxic Bodies*, viii.

15 Olivier Berreville has indicated that this mythic rural idyll of healthy happy cows in red barns and feeding in green pastures continues today in popular misconceptions of the dairy industry. Berreville notes how the dairy industry has capitalized on such scenes to promote milk consumption. See Olivier Berreville, "Animal Welfare Issues in the Canadian Dairy Industry," in *Critical Animal Studies: Thinking the Unthinkable*, ed. John Sorenson (Toronto: Canadian Scholars' Press, 2014), 186.

16 Aleck Ostry indicates that the Canadian urban poor bore a disproportionate cost of impure milk's health effects in large cities. See Ostry, *Nutrition Policy in Canada, 1870–1939* (Vancouver: University of British Columbia Press, 2007).

17 E. Melanie Dupuis, *Nature's Perfect Food: How Milk Became America's Drink* (New York: New York University Press, 2002), 5; Michael Egan, "Organizing Protest in the Changing City: Swill Milk and Social Activism in New York City," *New York History* 86, no. 3 (Summer 2005): 205–25.

18 Ostry, *Nutrition Policy in Canada, 1870–1939*, 36.

19 E. Melanie Dupuis has indicated that keeping a "family cow" was fairly common in America's Northeast, where cows were part of the scene of towns. Dupuis, *Nature's Perfect Food,* 5.

20 Mrs. Bourniot, "Keeping One Cow, The Family Cow at the North," in *Keeping One Cow: Being the Experience of a Number of Practical Writers In a Clear and Condensed Form Upon the Management of a Single Milch Cow* (New York: Orange Judd, 1880), 9.

21 Ibid., 9–10.

22 Helen MacMurchy, "Canadians Need Milk," Department of Health, Publication No. 12 (Ottawa: F.A. Acland, 1923), 6.

23 "Milk Inspection: The Board of Health Takes a Step in This Direction." *Hamilton Spectator*, February 1888. *Milk Scrapbook*, Hamilton

Archives, Hamilton Public Library, Hamilton, Ontario.

24 Hamilton City Council Minutes, 1884–1896, 72, 84, 85. Hamilton Archives, Hamilton Public Library, Hamilton, Ontario.

25 Hamilton City Council Minutes, 1896–1907, 7. Hamilton Archives, Hamilton Public Library, Hamilton, Ontario.

26 Ibid., 9.

27 These transitions in concerns over milk and the presence of cows in the city were also taking place in Los Angeles and other cities in the United States. In 1908, the Los Angeles City Council passed an ordinance to restrict the presence of cows. There were also petitions to the council to remove cows. See, for example, Jennifer Lisa Koslow, *Cultivating Health: Los Angeles Women and Public Health Reform* (New Brunswick, NJ: Rutgers University Press, 2009), 77–79, 86–95. Also, on the association of women as mothers and the public activism of the milk question, see Jennifer Koslow, "Putting It to a Vote: The Provision of Pure Milk in Progressive Era Los Angeles," *Journal of the Gilded Age and Progressive Era* 3, no. 2 (April 2004): 111–44; Julie Guard, "The Politics of Milk: Canadian Housewives Organize in the 1930s," in *Edible Histories, Cultural Politics: Towards a Canadian Food History*, ed. Franca Iacovetta, Valorie J. Korinek, and Marlene Epp (Toronto: University of Toronto Press, 2012), 271–85.

28 Hamilton City Council Minutes, 1896–1907, 22–24.

29 Ibid., 38.

30 Hamilton City Council Minutes, 1922–1947, 118. Hamilton Archives, Hamilton Public Library, Hamilton, Ontario.

31 W.A. Wilson, *Causes of Contamination and the Care and Preservation of Milk and Cream on the Farm*, Saskatchewan Department of Agriculture Bulletin No. 15 (Regina: J.W. Reid, Government Printer, 1914), 5.

32 On milk reform politics in Saint John, New Brunswick, see Jane Jenkins, "Politics, Pasteurization, and the Naturalizing Myth of Pure Milk in 1920s Saint John, New Brunswick," *Acadiensis* 37, no. 2 (2008): 86–105.

33 Helen MacMurchy, *Special Report on Infant Mortality* (Toronto: L.K. Cameron,, 1910), 3.

34 Dupuis, *Nature's Perfect Food*, 27.

35 Elizabeth Fee points out the role of the Rockefeller foundation in the Johns Hopkins School of Hygiene. See Elizabeth Fee, *Disease and Discovery: A History of the Johns Hopkins School of Hygiene and Public Health, 1916–1939* (Baltimore and London: Johns Hopkins University Press, 1987).

36 Duncan Ferguson, *Public Health Control: Of Milk & Other Food Supplies, Combined with The Problem of Housing & Slums Elimination* (Pretoria, South Africa: Carnegie Corporation Visitors' Committee, 1936).

37 Ibid., 20.

38 Anne McClintock, *Imperial Leather* (New York: Routledge, 1995); Seth Koven, chapter 4: "The Politics and Erotics of Dirt: Cross-Class Sisterhood in the Slums," in *Slumming: Sexual and Social Politics in*

Victorian London (Princeton, NJ: Princeton University Press, 2004); Duffy, *The Sanitarians*.

39 Report of the Milk Commission 1909 (Toronto: L.K. Cameron, 1910), 40.

40 J.H. Grisdale, *Milk Production in Canada: Crop Rotations, Dairy Barns, Breeding Dairy Cattle, Feeding Care and Management of Milch Cows*, Bulletin No. 72 (Ottawa: Government Printing Bureau, 1913), 7.

41 Charles F. Whitley, *Some Notes Gleaned from the Work of the Dairy Record Centres in 1912* (Ottawa: Dairy Cold Storage Commission, 1913), 7.

42 J.A. Ruddick, *Milk for Creameries*, 2nd ed. (Ottawa: Department of Agriculture, 1902), 3.

43 Madeleine Ferrières has claimed that fears of the tubercular cow and its effects on human health did not begin to emerge until the mid to late nineteenth century, when the possibility of contamination began to be conceived. Madeleine Ferrières, *Sacred Cow, Mad Cow: A History of Food Fears*, trans. Jody Gladding (New York: Columbia University Press, 2006), 286. On this cultural role of germs, see, for example, Nancy Tomes, *The Gospel of Germs: Men, Women, and the Microbe in American Life* (Cambridge, MA: Harvard University Press, 1998).

44 Ostry notes how the urban poor were targeted as particularly prone to unsanitary living and the use of impure milk. See Ostry, *Nutrition Policy in Canada, 1870–1939*, 26, 42.

45 In the case of milk reform in Chicago, Daniel Block has made a similar claim that the milk question was feminized in the common connections between the lactating functions of cows and mothers in the particular context of urbanization. Block has addressed this issue within the larger argument that predominantly male public health reformers appropriated the authority over reproduction in consolidating their expertise over milk, simultaneously asserting patriarchal claims over cows and women. See Daniel Block, "Saving Milk Through Masculinity: Public Health Officers and Pure Milk, 1880–1930," *Food & Foodways: History & Culture of Human Nourishment* 13. nos. 1/2 (January–June 2005): 115–34. Similarly, Kara Swanson has argued that male medical practitioners engaged in the question of 'pure milk' ultimately disciplined lactating bodies, specifically in the case of technologically perfecting milk. See Kara Swanson, "Human Milk As Technology and Technologies of Human Milk: Medical Imaginings in the Early Twentieth Century United States," *Women's Studies Quarterly* 37, nos. 1/2 (Spring/Summer 2009): 21–37.

46 Dupuis, *Nature's Perfect Food*, 5. Aleck Ostry's work on nutrition policy in Canada situates prominent advocacy for breastfeeding in the context of the anxieties surrounding cow's milk. Ostry also suggests that milk depots in Toronto, Hamilton, Ottawa, and London emerged as centres for educating mothers and made the transition to child welfare clinics. See Ostry, *Nutrition Policy in Canada, 1870–1939*, 3, 35, 42–43.

47 On the concerns over wet nursing, see, for example, Jacqueline Wolf, "'Mercenary Hirelings' or 'A Great Blessing'? Doctors and Mothers and Conflicted Perceptions of Wet Nursing and the Ramifications for Infant Feeding in Chicago 1871–1961," *Journal of Social History* 33, no. 1 (Fall 1999): 97–120. On the longer history of wet nursing in the context of the eighteenth century and the racial and class politics of impure breast milk, see Ruth Perry, "Colonizing the Breast: Sexuality and Maternity in Eighteenth-Century England," *Journal of the History of Sexuality* 2, no. 2 (1991): 204–34; and Elisabeth Badinter, *The Myth of Motherhood: An Historical View of the Maternal Instinct*, trans. Roger DeGaris (London: Souvenir Press, 1981). In this eighteenth-century context, debates surrounding impure milk centred on the conditions of the wet nurse rather than conditions of the cow, focusing particularly on the importance for white middle- and upper-class mothers to breastfeed.

48 Angus McLaren, *Our Own Master Race: Eugenics in Canada, 1885–1945* (Toronto: McClelland & Stewart, 1990).

49 Tasnim Nathoo and Aleck Ostry, *The One Best Way? Breastfeeding History, Politics, and Policy in Canada* (Waterloo, ON: Wilfrid Laurier University Press, 2009),35.

50 Margaret Derry has indicated how breeding was treated as an art for generating better-quality cattle for beef or dairy purposes. Derry notes the eugenic ties to improving herds, with Mendelian genetics slowly taking effect after 1900 and the American Breeders' Association being overtaken by eugenicists. See Derry, *Ontario's Cattle Kingdom*, 24–25.

51 On breeding Scottish cattle and Canadian connections, see M.R. Montgomery, *A Cow's Life: The Surprising History of Cattle and How the Black Angus Came to Be Home on the Range* (New York: Walker & Company, 2004), 23, 109, 113–14, 79.

52 Grisdale, *Milk Production in Canada*, 13.

53 Ibid.

54 Ibid.

55 Ibid., 19.

56 Derry, *Ontario's Cattle Kingdom*, 28.

57 Ibid.

58 Harriet Ritvo, "Possessing Mother Nature: Genetic Capital in Eighteenth-Century Britain," in *Noble Cows & Hybrid Zebras* (Charlottesville and London: University of Virginia Press, 2010), 157–76.

59 Helen MacMurchy, *The Canadian Mother's Book* (Ottawa: F.A. Acland, 1923), 69.

60 Wolf, *Don't Kill Your Baby*, 108.

61 Wolf, *Don't Kill Your Baby*, 30, 97, 92. Also, see Nathoo and Ostry, *The One Best Way?*, 30–31.

62 MacMurchy, *The Canadian Mother's Book*, 32.

63 Nathoo and Ostry, *The One Best Way?*, 29.

64 Helen MacMurchy, *Canadians Need Milk* (Ottawa: F.A. Acland, 1923), 10.

65 As Londa Schiebinger has shown, since the eighteenth century with the Linnaean classification

of mammals, lactating function became an important criterion for considering human/nonhuman kinship. In particular, Schiebinger highlights milk and the wet nursing debates as the political conditions shaping Linnaeus's choice of the term mammal, meaning "of the breast," to bind humans to animals. See Londa Schiebinger, "Chapter 2: Why Mammals Are Called Mammals," in *Nature's Body: Gender in the Making of Modern Science* (Boston: Beacon Press, 1993), 40–74.

66 Helen MacMurchy, *How To Take Care of the Baby* (Ottawa: F.A. Acland, 1923), 21.

67 MacMurchy, *The Canadian Mother's Book*, 30.

68 Ibid., 76.

69 Andrew Ebejer has noted that by the 1930s, milk was generally affordable to most low-income families. Yet rising prices after the market stabilized prompted protests that showed how milk by this time came to be regarded as essential to health. See Andrew Ebejer, "'Milking' the Consumer?: Consumer Dissatisfaction and Regulatory Intervention in the Ontario Milk Industry during the Great Depression," *Ontario History* 102, no. 1 (Spring 2010): 20–39.

70 M.E. Whalley, *Mastitis in Cows* (Ottawa: National Research Council, 1932), 1.

71 Ibid., 21.

72 Ibid., 18.

73 Kendra Smith Howard has shown that the 'pure milk' debates shifted in the mid-twentieth century to a focus on the contaminating effects of antibiotics used to treat mastitis in cows, which was associated with the dangers of human poisoning from the bacteria of the infected udder. See Kendra Smith Howard, "Antibiotics and Agricultural Change: Purifying Milk and Protecting Health in the Postwar Era," *Agricultural History* 84, no. 3 (Summer 2010): 327–51.

74 Hamilton City Council Minutes, 1922–1947, 8. Hamilton Archives, Hamilton Public Library, Hamilton, Ontario.

75 "Pure Milk for Babies – Child Life-Saving on Scientific Lines – Godsend to Mothers." *Hamilton Times*, 17 July 1909.

76 In the case of early twentieth-century Quebec, Denyse Baillargeon discusses how women's failure to breastfeed came to be construed as failed maternal and national responsibility. She notes that women had given reasons for not breastfeeding ranging from personal choice to fears of milk harming the infant to lack of milk due to overwork. See Denyse Baillargeon, *Babies for the Nation: The Medicalization of Motherhood in Quebec, 1910–1970*, trans. W. Donald Wilson (Waterloo, ON: Wilfrid Laurier Press, 2009), 34–35, 76.

77 Hamilton City Council Minutes, 1922–1947, 8. Hamilton Archives, Hamilton Public Library, Hamilton, Ontario.

78 Report of the Milk Commission 1909, 54.

79 Lawrence Weaver shows these transnational connections across Europe and the United States in terms of the different methods devised for purifying milk. See Lawrence Weaver, "Growing Babies: Defining the Milk Requirements of

Infants, 1890–1910." *Social History of Medicine* 23, no. 2 (August 2010): 320–37. Also, on the transnational dimensions of "humanizing milk," see T.B. Mepham, "'Humanizing' Milk: The Formulation of Artificial Feeds for Infants (1850–1910)," *Medical History* 37, no. 1 (July 1993): 225–49. On Nathan Straus's initiation of pure milk activism in New York City, see Julie Miller, "To Stop the Slaughter of the Babies: Nathan Straus and the Drive for Pasteurized Milk, 1893–1920," *New York History* 74, no. 2 (April 1993): 158–84.

80 "To Continue Clean Milk – Victorian Order Will Again Cooperate in the Movement," *Hamilton Times*, February 1910.

81 MacMurchy, *The Canadian Mother's Book*.

82 Ibid., 31.

83 Ibid., 30–31.

84 McLaren, *Our Own Master Race*, 32, 81.

85 Gaard, "Toward a Feminist Postcolonial Milk Studies," 602.

86 Nathoo and Ostry, *The One Best Way?*, 195. On the history of milk banks in early twentieth-century America, see Janet Golden, "From Commodity to Gift: Gender, Class, and the Meaning of Breast Milk in the Twentieth Century," *The Historian* 37, no. 1 (Fall 1996): 75–87.

87 Nathoo and Ostry, *The One Best Way?*, 195.

88 Samantha King, *Pink Ribbons Inc.: Breast Cancer and the Politics of Philanthropy* (Minneapolis: University of Minnesota Press, 2006).

89 Deborah Valenze, *Milk: A Local and Global History* (New Haven, CT: Yale University Press, 2011), 284.

90 Nathoo and Ostry, *The One Best Way?*, 197.

91 Gaard, "Toward a Feminist Postcolonial Milk Studies," 595.

92 Ibid., 609.

93 Valenze, *Milk*, 3.

94 Berreville, "Animal Welfare Issues in the Canadian Dairy Industry," *Critical Animal Studies*, 186–207. Also, see the recent video of animal cruelty on dairy farms. "Canada's Largest Dairy Farm Employees Accused of Animal Cruelty," *Huffington Post*, 9 June 2014, http://www.huffingtonpost.ca/2014/06/09/chilliwack- dairy–farm–animal–cruelty_n_5475953.html (accessed 22 June 2014).