Subsistence Production and Commodity Production in the British Imperial Food System: The Case of Nova Scotia Apples

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The history of agriculture in Nova Scotia's Annapolis Valley before the Second World War has mostly been written as a story of the marketing of apples to Britain. Indeed, the valley in the first half of the twentieth century featured the full apparatus of industrial fruit production: grading and inspection systems, mechanical sprayers delivering chemical sprays, expert advice, and an infrastructure of railways, packing houses, storage facilities, and commercial intelligence. Analysis of government and other expert reports, as well as diaries, oral interviews, and census data, reveals that the business of supplying apples to global markets was built on a foundation of household production that mixed commodity crops with the making of crop and animal products for local markets and the growing of food for farm families. For valley farmers, selling on global capitalist markets was only part of a range of strategies for household subsistence.

L'histoire de l'agriculture dans la vallée de l'Annapolis en Nouvelle-Écosse avant la Seconde Guerre mondiale a surtout porté sur la commercialisation des pommes en Grande-Bretagne. En effet, pendant la première moitié du XX^e^ siècle, la vallée était dotée de tout l'équipement de production fruitière industrielle : systèmes de classement et d'inspection, pulvérisateurs mécaniques dispersant des produits chimiques, conseils d'experts et une infrastructure comprenant des chemins de fer, des usines d'emballage, des entrepôts et des renseignements commerciaux. L'analyse des rapports du gouvernement, ainsi que des journaux intimes, des entretiens oraux et des données de recensement, révèle toutefois que l'approvisionnement des marchés mondiaux en pommes reposait sur une production domestique qui associait les cultures de base à la fabrication de produits végétaux et animaux pour les marchés locaux et à la production de denrées destinées aux

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familles de cultivateurs. Pour les agriculteurs de la vallée, la vente sur les marchés capitalistes mondiaux ne représentait qu'une partie des nombreuses stratégies de subsistance des ménages.

"ANOTHER FINE WARM DAY," Rebecca Ells wrote of Friday, October 11, 1901, in the Annapolis Valley of Nova Scotia. "The boys were picking apples again today, Nonpareils and some Baldwins." The following Saturday, a "cold, rough day," Rebecca "preserved some crab apples [and] dressed the churning of butter which Roley churned, 12 ¼ [pounds], and did little things in general. Manning finished picking Baldwins today, 112 barrels … and hauled 46 barrels of potatoes to Ilsley and Harvie this afternoon with Dick and Bess—about the first real work he has done with Bess. I feel very thankful that she is as well as she is. We do have a lot to be thankful for."[1]

Academic histories of pre-Second World War valley agriculture usually present farmers as focused mostly on the travails of exporting apples to Britain. The story of Annapolis Valley agriculture is one of the development (or lack of development) of commercial apple production. Popular history and memory—as seen in the Apple Blossom Festival, founded in 1930 and still going strong, folk songs by Stan Rogers, and the work of popular historians—present a similar story, though with a greater focus on the romance of orcharding.[2] Neither version fully captures the life of Rebecca Ells and her son Manning, who not only grew and sold apples, but also preserved and prepared foods for their own consumption and produced a variety of products for sale: butter and potatoes, chickens and livestock. They worked with aching bodies—"I have felt pretty well used up to day" Rebecca wrote in a not untypical passage on October 18, 1901—alongside the bodies of others, from hired hands like Roley to the "boys" who helped Manning pick apples.[3] The relationships necessary for survival stretched across the nearby communities of Wolfville, Kentville, and Canning, and from the commercial (Ilsley and Harvie) to the personal: Ells's brother-in-law Rob frequently came to help, for example. They also included non-human relationships: Dick and Bess were Rebecca and Manning's horses.

It is true that, as early as the late nineteenth century, apple growing was an important part of life in the Annapolis Valley. It is also true that apple growers

1 Rebecca Ells, "Rebecca Chase Kinsman Ells Diary," in Margaret Conrad, Toni Laidlaw, and Donna E. Smyth, eds., *No Place like Home: Diaries and Letters of Nova Scotia Women, 1771–1938* (Halifax: Formac, 1988), pp. 221–222. Thanks to Jodey Nurse for putting me on to this source. Nonpareils and Baldwins are both varieties of apples.

2 Julian Gwyn, *Comfort Me with Apples: The Nova Scotia Fruit Growers' Association, 1863–2013* (Berwick, NS: Lupin Press, 2014); Claire Elizabeth Campbell, *Nature, Place, and Story: Rethinking Historic Sites in Canada* (Montréal and Kingston: McGill-Queen's University Press, 2017), pp. 54–70; Margaret Conrad, "Apple Blossom Time in the Annapolis Valley 1880–1957," *Acadiensis*, vol. 9, no. 2 (1980), pp. 14–39; N. H. Morse, "An Economic History of the Apple Industry of the Annapolis Valley in Nova Scotia" (PhD dissertation, University of Toronto, 1952); Willard V. Longley, *Some Economic Aspects of the Apple Industry in Nova Scotia*, Bulletin 113 (Halifax: Nova Scotia Department of Agriculture, 1932); Anne Hutten, *Valley Gold: The Story of the Apple Industry in Nova Scotia* (Halifax: Petheric Press, 1981).

3 Ells, "Rebecca Chase Kinsman Ells Diary," in Conrad, Laidlaw, and Smyth, *No Place like Home*, p. 222.

were tied closely into the British market and thus into the British-centred global market for food: typically, around 80% or more of the Annapolis Valley apple harvest went to Britain. At the same time, evidence from diaries, oral histories, royal commissions, and the census suggests that these farms continued to provide for their own subsistence and to sell crops on local markets. In contrast to much of the work on Annapolis Valley agriculture and on the industrialization of agriculture more generally in this period, evidence suggests that an increasingly industrialized system of apple production coexisted with continuing production of subsistence crops and crops grown for local markets, all carried out on relatively small, family-run farms. These non-commercial practices were not remnants of the past hanging on in the face of an inevitable transition to market farming; they were, instead, an expression of the ability of apple farmers to engage with a global capitalist market for food while at least partly maintaining their independence from its pressures for efficiency and order.

The first section of this paper argues that discussions of the role of nature under capitalism allow us to account for the persistence of this kind of production well into the twentieth century. Rural historians, most prominently R. W. Sandwell, have argued recently for the persistence of such household production and subsistence practices, but the period of the early twentieth century remains underexplored, as do regions tied to the global market for food in general and the Atlantic region specifically.[4] The following section asserts that Annapolis Valley apple production was a form of industrial agriculture. After that comes a section exploring the nature of ongoing household production practices in the valley up to the Second World War, arguing that these upheld, rather than contradicted, the production of apples for sale on the global market.

Households, Subsistence, and the Market

Why do we need to account for the persistence of household production in the valley? It is now going on 30 years, after all, since Ruth Sandwell argued that new scholarship was moving us away from the old tendency to understand rural Canadian history in terms of a "linear transformation … from subsistence to commercial agriculture."[5] Yet it is not clear that agricultural historians have entirely broken the hold of the old "transition to capitalism" model; the agricultural history of the Annapolis Valley, which has produced relatively little scholarship in recent years, has certainly not done so. The small scholarly literature has a strong focus on the problems of developing a profitable apple industry: How could growers be

4 Sandwell's latest and most accessible statement of this argument is in R. W. Sandwell, *Canada's Rural Majority: Household, Environment, and Economies, 1870–1940* (Toronto: University of Toronto Press, 2016). Sandwell shows that household subsistence practices continued alongside the global market for wheat (on the prairies) but does not explore the Annapolis Valley case in any detail. Harriet Friedmann argued some years ago that household production was crucial to the success of Canadian prairie farmers in the global wheat market but did not focus on subsistence practices, which Sandwell and others make clear prairie farmers relied on. See Harriet Friedmann, "World Market, State, and Family Farm: Social Bases of Household Production in the Era of Wage Labour," *Comparative Studies in Society and History*, vol. 20, no. 4 (1978), pp. 545–586.

5 R. W. Sandwell, "Rural Reconstruction: Towards a New Synthesis in Canadian History," *Histoire sociale/Social History*, vol. 27, no. 53 (1994), p. 7.

encouraged to grow blemish-free, well-shaped apples in the varieties that would sell in Britain? How would they deal with insect pests, like the codling moth, that threatened the fruit? How should the apple be packed and shipped? And what sort of marketing arrangements would deliver the best price to growers? These sorts of questions preoccupied the largest growers, united in the leadership of the Nova Scotia Fruit Growers' Association (NSFGA), as charted in Julian Gwyn's recent *Comfort Me with Apples: The Nova Scotia Fruit Growers' Association, 1863–2013*. Along with agricultural reformers in government and agricultural societies, NSFGA members decried the low quality of Nova Scotia apples and dreamed of the profits to be gained from higher quality fruit, carefully packed so as to avoid damage on the long trans-Atlantic trip. The other major issue was the marketing of apples, as shown in what is still the authoritative history of the apple industry, N. H. Morse's 1952 dissertation "An Economic History of the Apple Industry of the Annapolis Valley in Nova Scotia." Growers struggled with the question of whether to stick with the system of growers' cooperatives and private fruit shipping companies that had grown up over the years or to embrace a system of centralized or "orderly" marketing, where growers would sell to a single body that would then have the market power to ensure the best prices. Morse argues that the size of the British market and the relative ease of getting there from Nova Scotia meant that valley growers could stick with the system they were used to and avoid the unknown of centralized marketing. The problem, according to Morse, was that "the grower interest in marketing is not the same as the individual's interest.… [T]he problem in the Annapolis Valley, as among primary producers generally, is that individualism of growers may be in opposition" to the interests of growers as a group. Gwyn is less circumspect: "Owing to the disorganized marketing system … income was being squandered."[6] Margaret Conrad, in her "Apple Blossom Time in the Annapolis Valley," also focuses on the issue of marketing apples, folding the postwar history of the valley into larger discussions of Maritime underdevelopment, arguing that blame for the decline of the industry after the Second World War lay largely with the Canadian government. After the war, Britain could no longer afford to buy, local markets were small, and the government had little interest in helping growers open up new markets in North America or countries in the Global South.[7] Most recently, Claire Campbell has critiqued Grand Pré National Historic Site for telling a story of peasant agriculture that hides the more recent era of industrial agriculture.[8]

What is not apparent in this literature is much sense of the social structure and production strategies in which the industry operated. Examining nineteenth-century Ontario and New Brunswick, for example, Douglas McCalla and Béatrice Craig have argued that farmers' engagements with the global market were embedded in a complex set of environmental, economic, and social arrangements. Local merchants purchased from farm families not just wheat and logs—the so-called staples once beloved of Canadian historians—but also butter, eggs (both usually produced by the women of the farm), livestock, and chickens. Farmers, in turn,

6 Morse, "Economic History," pp. 462, 480–481, 488; Gwyn, *Comfort Me*, pp. 106–107.
7 Conrad, "Apple Blossom Time," esp. pp. 28–39.
8 Campbell, *Nature, Place, and Story*, pp. 54–70.

bought such necessary items as candles and medicines and indulged in housewares, good clothing, and candles made from whale blubber. Farm families drew on whatever consumption and production strategies would ensure the prosperity of the household as a whole, sewing clothes using purchased needles and fabric and sweetening imported tea with homemade maple sugar.[9]

Other work suggests that these strategies persisted into the twentieth century, particularly in areas where there was less opportunity to engage in commercial agriculture. Kenneth Sylvester's work on Montcalm, Manitoba, shows an increasing intrusion of the market into farm decisions around the turn of the century. Gérard Bouchard, based on a large study of farm families in the relatively isolated Saguenay region of Quebec, has found a blend of self-sufficiency and market reliance—which he calls "co-integration"—occurring as late as the 1930s. R.W. Sandwell argues that up to the Second World War, Canadian farms were characterized more by occupational plurality, mixed subsistence production, and a focus on the economic health of the household as a whole than they were by an intense focus on commodity production, industrial methods, and profit maximization. Historians, she suggests, have missed this, partly because of the blinding effect of the staples thesis and partly because official records make it so much easier to see the commodity production that governments wanted to encourage than to chart other, less commercial activities.[10]

What made this possible, Sandwell suggests, is farmers' access to the means of production and particularly a wider rural access to what political scientist Ellen Meiksins Wood has called the "means of subsistence": nature, in other words. Household production continued up to the Second World War because in large parts of rural Canada people could continue to access nature in order to get the things they needed to survive. This worked differently in different places. In areas where the land had largely been converted to agriculture, such as southern Ontario, farmers used their land to produce food for the farm household as well as a variety of products other than a major cash crop. Where people could still access forests

9 Douglas McCalla, *Planting the Province: The Economic History of Upper Canada, 1784–1870* (Toronto: University of Toronto Press, 1993); Béatrice Craig, *Backwoods Consumers and Homespun Capitalists: The Rise of a Market Culture in Eastern Canada* (Toronto: University of Toronto Press, 2009); Douglas McCalla, *Consumers in the Bush: Shopping in Rural Upper Canada* (Montréal and Kingston: McGill-Queen's University Press, 2015).

10 Kenneth M. Sylvester, *The Limits of Rural Capitalism: Family, Culture and Markets in Montcalm, Manitoba, 1870–1940* (Toronto: University of Toronto Press, 2001); Gérard Bouchard, "Marginality, Co-Integration and Change: Social History as a Critical Exercise," *Journal of the Canadian Historical Association*, vol. 8, no. 1 (1997), pp. 19–38; Gérard Bouchard, "Through the Meshes of Patriarchy: The Male/Female Relationship in the Saguenay Peasant Society (1860–1930)," *History of the Family*, vol. 4, no. 4 (1999), pp. 397–425; Sandwell, *Canada's Rural Majority*; R. W. Sandwell, "Notes Toward a History of Rural Canada," in John R. Parkins and Maureen G. Reed, eds., *Social Transformation in Rural Canada: Community, Cultures, and Collective Action* (Vancouver: UBC Press, 2013), pp. 21–38; Sandwell, "Rural Reconstruction"; and R. W. Sandwell, "Rural Households, Subsistence and Environment on the Canadian Shield, 1901–1940," in James Murton, Dean Bavington, and Carly Dokis, eds., *Subsistence under Capitalism: Historical and Contemporary Perspectives* (Montréal and Kingston: McGill-Queen's University Press, 2016), pp. 103–146. In another important study, *Family, Church, and Market: A Mennonite Community in the Old and the New Worlds, 1850–1930* (Toronto: University of Toronto Press, 1993), Royden Loewen argues that the desire of Mennonite communities in Manitoba and Nebraska to maintain the farm household meant deciding, first, whether or not to embrace commercial agriculture on individually owned plots of land and, second, whether to remain rural or to move into town.

for wood or food or could still fish and hunt for subsistence, farmers, loggers, and miners could maintain households with some independence from the market economy. Prairie wheat farmers relied on kitchen gardens, fish from streams, and partridges brought down by kids with .22 rifles. Fishermen might harvest fish to sell while living in households that relied on gathered berries and kitchen gardens for food and shearing sheep for clothing. Even in a railway town like North Bay, Ontario, some households created a subsistence by combining cash income from work on the rails with the produce of a garden.[11]

The point is not that some sort of peasant paradise of self-sufficiency existed in Canada up to the Second World War. Environmental historians have shown how rights to access nature for subsistence were gradually taken away in nineteenth-century Canada. Fishing is a good example. In the name of conservation, governments from British Columbia to Ontario, from Quebec to New Brunswick, banned taking fish by net or spear, or the building of weirs, allowing only hook and line fishing (or "angling"). Genuine problems in the supply of salmon and other game fish were blamed not on commercial fishing but on Indigenous and settler subsistence fishermen, while support for angling was mostly an attempt to encourage middle- and upper-class anglers to come to Canada to fish and spend money. In New Brunswick and Quebec, the enforcement of conservation regulations was turned over to elite fish-and-game organizations. Indigenous and non-Indigenous rural people, who had both formerly relied on fish as food, were now to make money as guides. They could then use the money to purchase their food.[12] As we have seen, this process was not complete until well into the twentieth century. But it began long before that, and those who relied on access to forests and streams were ultimately more vulnerable than farmers, who, owning their land, could more easily decide how to use it.

From the point of view of critics of the relationship between capitalism and the environment, this development is not surprising. Political scientist Ellen Meikins Wood argues that capitalism developed in early modern England as the means of subsistence—food, and the land to grow it on—became commodities, obtainable only through market relations. The development of private property, specialized commodity farming ("agrarian capitalism"), and therefore markets for food, were at the heart of the creation of capitalism, she argues. Wood sees capitalism as a situation of "market dependence," where everything, right down to land and labour,

11 Ellen Meiksins Wood, *The Origin of Capitalism: A Longer View* (London: Verso, 2002), pp. 58–60; Sandwell, *Canada's Rural Majority*, pp. 133–134, 204–205; Françoise Noël, *Family and Community Life in Northeastern Ontario: The Interwar Years* (Montréal and Kingston: McGill-Queen's University Press, 2009).

12 William Knight, "Blurring the Boundaries: Subsistence and Recreational Fisheries in Late-Nineteenth-Century Ontario," in Murton, et al., *Subsistence Under Capitalism*, pp. 60–75; Bill Parenteau, "A 'Very Determined Opposition to the Law': Conservation, Angling Leases, and Social Conflict in the Canadian Atlantic Salmon Fishery, 1867–1914," *Environmental History*, vol. 9, no. 3 (2004), pp. 436–463; Darcy Ingram, *Wildlife, Conservation, and Conflict in Quebec, 1840–1914* (Vancouver: UBC Press, 2013). On the Newfoundland cod fishery, see Dean Bavington, *Managed Annihilation: An Unnatural History of the Newfoundland Cod Collapse* (Vancouver: UBC Press, 2010), chapter 2. On wildlife more generally, see Tina Loo, *States of Nature: Conserving Canada's Wildlife in the Twentieth Century* (Vancouver: UBC Press, 2006), chapters 1 and 2.

is produced for sale on the market. Deprived of rights to access land in order to produce food, English peasants and labourers had no choice but to participate in markets for land and labour. Being competitive, these markets compelled efficiency, rewarding those who could wring more productivity out of people and nature.[13]

If all of this seems totalizing, however, if the point here seems to be that capitalism historically has pulled more and more of nature into the pressures of the market, then note that it is also possible to flip Wood's argument on its head. Where people could retain access to the means of subsistence, as happened in large parts of Canada up the 1940s, they could fashion a living outside of the market. As Karl Polanyi argued some years ago, if market economies function by treating labour and nature as commodities for sale and trade, it's also true that this is a strategy with in-built limits. Trees or fish (not to mention people) are not produced to be items of exchange. They are not simply lumber and protein. Trees produce oxygen and protect soils—they are part of larger systems that have nothing to do with the market. Treating them as if they are creates contradictions, which must be smoothed out by the government (through labour and environmental laws, for instance). As Timothy Mitchell has argued, the building of modernity has required a messy, complex structuring of relationships between particular people and particular natures in particular places. In nineteenth-century New Brunswick, for instance, ordinary people pushed back against the imposition of conservation regulations. They ignored the regulations and threatened, sometimes with violence, the game wardens tasked with enforcing them; they were helped by a law enforcement system that was sympathetic to people trying to feed their families from nearby rivers and streams. Even if it is true that capitalism is, as environmental historian Ted Steinberg has argued, "bent on bringing everything from land to water to air into the world of exchange," and even if, as Jason Moore has argued, capitalism is a "way of organizing nature," this control is never fully complete.[14]

Apples for the Empire

Capitalism's control over nature was certainly not complete by the mid-twentieth century in the Annapolis Valley of Nova Scotia, despite the valley being fully committed by this time to an industrial model of apple production. Arising in the early twentieth century, industrial agriculture represented a fundamentally new way of thinking about how agriculture should be done—using off-farm inputs, according

13 Wood, *Origin of Capitalism*, chapters 4 and 5. For a fuller discussion, see Larry Patriquin, ed., *The Ellen Meiksins Wood Reader* (Boston: Brill, 2012). Jason W. Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (London: Verso, 2015), p. 17 and throughout argues that competitive markets rely on a constant supply of cheap food, energy and raw materials to function, with governments employing science, infrastructure, and violence to ensure an uninterrupted flow.

14 Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time*, 2nd Beacon paperback ed. (1944; Boston: Beacon Press, 2001); Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley: University of California Press, 2002); Theodore Steinberg, "Can Capitalism Save the Planet?," *Radical History Review*, no. 107 (2010), pp. 7–24, quoted in Steven Stoll, "A Metabolism of Society: Capitalism for Environmental Historians," in Andrew C. Isenberg, ed., *The Oxford Handbook of Environmental History* (Oxford: Oxford University Press, 2014), p. 369; Moore, *Capitalism*, p. 2. On the persistence of subsistence practices in the modern world and their relationship to trade and wage work, see James Murton, Dean Bavington, and Carly Dokis, "Introduction: Why Subsistence?," in Murton, et al., *Subsistence Under Capitalism*, pp. 3–39.

to the latest scientific knowledge about plant breeding, production, and storage, as a highly capitalized enterprise focused on the supplying of key commodity crops to distant markets via a network of centrally controlled storage facilities, packing houses, and railways.[15]

Commercial apple production in Canada took place in three main regions that had climates temperate enough to allow for the maturing of the fruit: the Okanagan Valley in British Columbia, the Niagara region of Ontario, and Nova Scotia's Annapolis Valley (Figure 1). The Annapolis Valley is sheltered by low mountains to the north and the south and features easily drained sand and gravel soils well suited to fruit production. Acadian settlers grew apples in the valley, and when New England settlers (known to historians and locals as the Planters) arrived in the mid-eighteenth century following Britain's ethnic cleansing of the Acadians, they introduced apple varieties like Sweet Pippin, Red Bristowe, and Bishop's Pippin. Growers in Annapolis County, in the western end of the valley, sold apples in Saint John, New Brunswick. In 1858, the completion of the Nova Scotia Railway from Halifax to Windsor drew growers in Hants and eastern Kings Counties closer to the markets of the colonial capital. Apples were packed into barrels and shipped directly from nearby port facilities at Wolfville, Port Williams, Canard, and Canning to the railhead at Windsor. With a basic infrastructure and set of practices in place, ambitious local men turned to the goal of supplying Britain.[16]

In the nineteenth century, Britain was the workshop of the world, its labour turned to factory production and away from agriculture. It was hungry for food.[17] For Nova Scotians at the time, it would hardly have qualified as a foreign market. Britain was the home country; opinions about British politics and events back home rolled off the tongues of educated Nova Scotians as easily as did discussions of local matters.[18] "Nova Scotia," one booster proudly proclaimed, "stands to-day, *facile princeps*, among the Colonial possessions of our Great British Empire. The blood of our Anglo-Saxon progenitors still runs warm through our veins."[19] This assumed cultural and racial connection was a crucial component in building the market for Nova Scotia apples in Britain. Still, the ocean was a formidable barrier. Distance would need to be overcome. Local boosters like R. W. Starr argued that Nova Scotia was closer to Britain than any other North American producing region,

15 Deborah Kay Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (New Haven, CT: Yale University Press, 2003); Steven Stoll, *The Fruits of Natural Advantage: Making the Industrial Countryside in California* (Berkeley: University of California Press, 1998); Donald Worster, *Dust Bowl: The Southern Plains in the 1930s* (New York: Oxford University Press, 1979).

16 Morse, "Economic History," pp. 6–10.

17 R. C. Michie, "The International Trade in Food and the City of London Since 1850," *Journal of European Economic History*, vol. 25, no. 2 (1996), pp. 369–404; Raj Patel, *Stuffed and Starved: The Hidden Battle for the World Food System* (Toronto: Harper Perennial, 2007); James Murton, "John Bull and Sons: The Empire Marketing Board and the Creation of a British Imperial Food System," in Franca Iacovetta, Marlene Epp, and Valerie J. Korinek, eds., *Edible Histories, Cultural Politics: Towards a Canadian Food History* (Toronto: University of Toronto Press, 2012), pp. 225–248.

18 Ian McKay makes this point in reference to the prolific labour writer Colin McKay. See Ian McKay, *For a Working-Class Culture in Canada: A Selection of Colin McKay's Writings on Sociology and Political Economy, 1897–1939* (St. John's, NL: Canadian Committee on Labour History, 1996).

19 "King's County Agricultural Society… Directors Report to King's County Agricultural Society, for 1885," *Annual Report of Secretary for Agriculture of Nova Scotia* (1886), p. 74.

and apples kept well. In 1863, Starr and others formed the NSFGA. Julian Gwyn calls the initial members "gentlemen improvers," though they were almost all also active farmers. The formation of the NSFGA followed from a major event on the other side of the ocean: a display of dried and preserved examples of Nova Scotia fruit that won a silver and seven bronze medals at an exhibition in London in 1860.[20] At NSFGA meetings, speakers considered how much profit could be made from growing apples, discussed how to space apple trees in the orchard, how to prune and fertilize them as they grew, and how to pack apples for transport overseas; they lobbied the railways to introduce refrigerated box cars and considered what chemical sprays to use to combat pests like fall and spring cankerworms, which in 1868 reportedly devastated two orchards.[21] In 1869, a railway running the length of the valley was completed. By the 1880s, steamship service between Halifax and Britain had improved and become cheaper. Nova Scotia apples, the Kings County Agricultural Society declared (somewhat hopefully) in 1881, "now have a permanent market across the Atlantic."[22]

At the urging of the NSFGA, the provincial government founded a horticulture school in Wolfville, in the heart of the Kings County apple-growing region. The school moved to Truro, Pictou County, in 1905, but the NSFGA successfully lobbied the Canadian government to establish an Experimental Farm at nearby Kentville to conduct research on producing better fruit. By the eve of the First World War, apple warehouses lined the railways, allowing growers to store apples for later sale (see Figures 1 and 2). Acreage under apple trees and consequent production increased. Local markets were soon glutted; the increase of production in New England and the McKinley Tariff of 1890 made that market increasingly unattractive. Growers increasingly aimed almost exclusively at the British market, which quickly came to absorb almost all of Nova Scotia's output. In 1871, the province produced 132,068 barrels of apples, 66% of which went for export. In 1911, 81% of the record crop of 1,734,876 barrels left the province. And the trend continued up to the Second World War. In 1924, 77% of the crop of 1,471,015 barrels was exported. In 1934, it was 2,241,718, with 74% going overseas.[23]

By the late nineteenth century, Nova Scotia apples were global commodities. They were therefore subject to the competitive pressures that came with participation in a global capitalist market for food. The resulting quest for efficiency and productivity in production—in order to drive down costs and thus prices—and to find a niche in the market shaped what got produced and how. One effect was to narrow the varieties of apples produced. Nova Scotia growers sent 118 varieties of apples to the Edinburgh Apple and Pear Congress in 1887, divided into dessert (for eating raw) and culinary (cooking) varieties and complete with tasting notes. Examples included Bellflower ("yellow, tender, and juicy, with a sweet, brisk, pleasant flavour"), Hog Island Sweet ("flesh yellowish white, sweet, juicy, and

20 Morse, "Economic History," pp. 10–12; Gwyn, *Comfort Me*, pp. 38–39.
21 Gwyn, *Comfort Me*, pp. 41–71.
22 "Report of the Kings County Agricultural Society, Grand Pre," *Annual Report of the Central Board of Agriculture of Nova Scotia* (1881), p. 90.
23 Morse, "Economic History," pp. 14–16, 22, 66; Conrad, "Apple Blossom Time," pp. 16–19.

Figure 1. Map of Rail Lines, Apple Warehouses and the Location of Apple Trees in the Annapolis Valley, 1920s/30s.

Source: Map by Eric Leinberger, based on Willard V. Longley, *Some Economic Aspects of the Apple Industry in Nova Scotia*, Bulletin No. 113 (Halifax: Nova Scotia Department of Agriculture, Bulletin, 1932), p. 4; originally a thesis presented to the University of Minnesota, 1931; and Charles C. Colby, "An Analysis of the Apple Industry of the Annapolis-Cornwallis Valley," *Economic Geography*, vol. 1. no. 2 (July 1925), p. 17.

melting"), Nonpareil, M'Sweeney's ("greenish white, firm, crisp … rather acid") and Fameuse ("white, tender, juicy, … delicately perfumed"). The judges at this particular show found the Nova Scotia dessert apples to be superior to their culinary varieties. But the future of the industry turned out to be in cooking apples, packed in barrels and sold cheap in London, Manchester, and Glasgow. By 1939, a census of fruit trees in the valley showed a heavy concentration of culinary varieties, especially Ben Davis, Gano, Stark, Baldwin, and Gravenstein. Of the 17 major varieties produced in the valley, only one, McIntosh, was primarily for eating "out of hand." David Crowe, who grew up on an Annapolis Valley farm, recalled in an interview with the author in 2012 that his father bought a farm before the Second World War with a 20-acre orchard containing 54 varieties. He immediately set about shifting to recommended types, grafting them onto the existing rootstock.

Figure 2. Apple Warehouses at Sheffield Mills.
Source: Willard V. Longley, *Some Economic Aspects of the Apple Industry in Nova Scotia*, Bulletin 113 (Halifax: Nova Scotia Department of Agriculture, 1932), between pp. 52 and 53; originally a thesis presented to the University of Minnesota, 1931.

There was a "big six" of varieties at the time, Crowe recalled, including Gravenstein, McIntosh, and Red Delicious.[24]

Another effect of the global market was pressure to produce the perfect specimen of apple to compete with growers in other parts of the world. The global apple was shaped and coloured like a typical apple of its variety, free of spots and blemishes and of the proper size (Figure 3). Producing an apple of this sort required intensive intervention into the life of the orchard. An unpruned apple tree, reformers warned, would grow a thick set of branches that would kill off any potential for branches on the inside of the resulting umbrella to grow any fruit. In order to get maximum production out of their orchard, growers were encouraged to prune regularly. The soil had to be kept healthy. Reformers in the late nineteenth and early twentieth centuries experimented with various means to enrich the soil, from applying chemical fertilizers (with mixed results) to using manure (with more consistent results) and planting nitrogen-fixing crops like clover, which had to be regularly mowed and plowed into the soil. Apple crops also needed to be thinned. Without thinning, a tree would produce lots of fruit, but the apples would be small. Thinners used scissors to cut immature apples off the tree, thus allowing the remaining fruit to grow to the size desired by British shoppers. When the apples matured, they of course needed to be picked, a job done (then as now) by hand. Pickers used ladders up to 20 feet long to reach the top branches, dropping apples into specially made baskets and then into barrels or boxes for transport to

24 "Nova Scotia at the Edinburgh Apple and Pear Congress," *Annual Report of the Secretary for Agriculture of Nova Scotia* (1887), pp. 28–48; Morse, "Economic History," pp. 70–71; David Crowe, interview with author, November 13, 2012, Wolfville, NS.

Figure 3. This poster would have adorned the side of a box of apples packaged and sold by the United Fruit Companies of Nova Scotia (now Scotian Gold), a grower's co-operative. The date is unknown, but both boxed apples and the Scotian Gold name were not adopted until after the Second World War. As a piece of commercial art, it illustrates the sort of idealized apple envisioned by the leaders of the apple industry.
Source: Original is in the possession of the author. Reproduced by permission of Scotian Gold.

the nearby packing house. In the packing house, apples were sorted into grades and carefully packed into barrels, the goal being to apply the top of the barrel with just enough pressure to hold the apples in place without bruising them. At the end of the harvest, growers, their families, and hired help crawled along the ground, cleaning up the orchard floor of fallen, damaged apples and salvaging those that could be sent for processing into juice or pectin. An unnamed orchardist, likely from the provincial agricultural college at Truro, toured the province in 1925 and 1926 evaluating orchards and looking approvingly on farms that did all of these things well. The orchard of a Mr. Donald Urquhart of West Bay, Cape Breton, he judged to be in good shape: "all in sod … trees well filled with blossom buds—vigorous and healthy. Well pruned … fertilized with manure, slaughter house offal, and fish refuse."[25]

25 Linus Woolverton, *The Canadian Apple Grower's Guide* (Toronto: William Briggs, 1910), pp. 13–87; Laurie Henniger, interview with author, November 15, 2012, Sheffield, NS; Woolverton, *Canadian Apple Grower's Guide*, pp. 49–96; Acadia University, Esther Clark Wright Archives (hereafter ECWA), Digital Collections, Orchardist's Notebook, 1924–26, 1900.084-ORC/1.

Probably the most important contribution toward the creation of a proper global apple, reformers argued, was spraying. Dousing apple trees with pesticides and fungicides—creating a "chemical shield" against pests and diseases—was increasingly necessary for those who hoped to sell into the British market and was the major new activity that came from the advent of the global apple.[26] There were a variety of ways to kill pests: Bordeaux was a solution of copper sulphate and quicklime; Lime-Sulphur, a solution of quicklime and sulphur; Kerosene Emulsion was hard soap and coal oil in solution; and arsenic-based sprays included Arsenate of Lead and Paris Green. Farmers mixed their own spray solutions on the farm and applied them using hand pumps or mechanical units often built in the valley. A typical spray outfit featured a barrel mounted on a wagon and pulled by a horse or a tractor, a pump, and a variety of spray nozzles.[27]

Farmers sprayed to kill off damaging insects and to control fungous diseases. The problem of "spotted, cracked, and crooked apples," typically produced by diseases such as Apple Scab, Bitter Rot (or Ripe Rot), Black Spot, and Canker, could be dealt with, it was advised, through spraying.[28] Reformers from the Nova Scotia Horticultural School conducted trials and sent reports to magazines like the *Farmers Advocate* for publication along with side-by-side photographs showing sprayed apples were larger and blemish-free.[29] The Horticultural School conducted lecture tours in conjunction with the government and agricultural societies, adding in 1898 a "spraying meeting" to demonstrate how to prepare sprays and apply them to the trees. F. C. Sears, head of the school, noted that "the importance of this operation can scarcely be overestimated when almost every mail brings letters from commission men and others in England complaining of the prevalence of black spot on apples."[30] Reformers were always concerned with blemishes (many from poor packing or rough handling, though some from disease or infestations) that cropped up in Britain. These had the potential to damage the reputation of Nova Scotia fruit. The appearance of the fruit and the reputation of growers was essential in a global market, since they were the only means by which British apple dealers and apple eaters could judge the quality of what they were buying.

Household Production

Apple production in the Annapolis Valley thus featured many of the aspects of industrial agriculture. Production, grading, and inspection systems aimed at producing a set of flawless, identical apples. Farmers increasingly relied on mechanical equipment and chemicals produced off the farm. Sales and marketing

26 Stoll, *Fruits of Natural Advantage*.

27 The configuration of spray outfits can be seen in photographs in Woolverton, *Canadian Apple Grower's Guide*, pp. 56–60, 111–122, and in displays at the Nova Scotia Apple Growers' Association's Blair House Museum, Kentville, NS.

28 "Kings County Agricultural Society [Report of]," *Annual Report of the Secretary for Agriculture, Nova Scotia. For the Year 1902* (1903), p. 186; Woolverton, *Canadian Apple Grower's Guide*, pp. 109–110.

29 F. C. Sears, Nova Scotia School of Horticulture, "Results of Spraying in 1898," *Annual Report of the Secretary for Agriculture, Nova Scotia, for the Year 1898* (1899), pp. 67–69.

30 F. C. Sears, "Report of the Nova Scotia School of Horticulture," *Annual Report of the Secretary for Agriculture, Nova Scotia, for the Year 1898* (1899), p. 43.

were supported by an infrastructure of railways, packing houses, storage facilities, and commercial intelligence that connected Nova Scotia and Britain.

This industrial infrastructure was built upon an existing rural landscape. Even by 1939, most farms in the valley were still quite small; of 2,509 growers in the valley, 53% owned only eight acres or less. Farms over 100 acres existed, but were not common: the 16 largest growers took up only 10% of the total acreage under apples in the valley.[31] These growers protected their right to sell their fruit to whomever they wished, rejecting the kind of centralized marketing co-ops that dominated the fruit landscapes of California and British Columbia. The United Fruit Companies was founded in 1911 with the goal of uniting local co-ops under one umbrella, but it struggled to enforce standards and centralize marketing. Much of the business of shipping and marketing fruit, over 50% by the 1930s, was occupied by three private companies: the British Canadian Fruit Company, based in Kentville and partly financed by the English firm J&H Goodwin; W. H. and his son George Chase of Port Williams; and Herbert Oyler, also from Kentville.[32] Audrey Goucher-Millet, daughter of a fruit grower, was interviewed by the author in 2012. She recalled that her father sold apples directly to an English buyer. The father of apple grower David Chute, in a handwritten memoir, recalls that in the 1930s his grandfather Perry would ship apples by horse and wagon to the nearby centre of Berwick, but would not sell to the Berwick Fruit Company (an important local cooperative): "Just why Perry Chute would not become a member, is not known. In later years Perry put the farm apples in the Pleasant Valley Company, Berwick. Later [about 1931–2], Max Chute became a member of the Berwick Fruit Company … and apples were taken in the fall to that warehouse."[33]

The business of apples was only part of what valley farmers did. This is clear from records of the decennial census. As Graph 1 shows, production of field crops (grains, hay, fodder crops, and potatoes) continued alongside fruit production, with substantially more land devoted to field crops than apples.[34] In Kings County, the area of most concentrated fruit production and the county where industrial methods made their greatest advance, the trends visible in Graph 1 were more marked: acreage devoted to field crops remained relatively steady, though acreage devoted to orchards more than doubled, from 12,949 acres in 1901 to 26,054 acres in 1941.[35] Some sub-county data on individual towns and their surrounding areas is also available. This shows that in the area around Port Williams in 1941, for instance,

31 Morse, "Economic History," pp. 73–74.

32 Conrad, "Apple Blossom Time," pp. 20–22; Gwyn, *Comfort Me*, pp. 90–101.

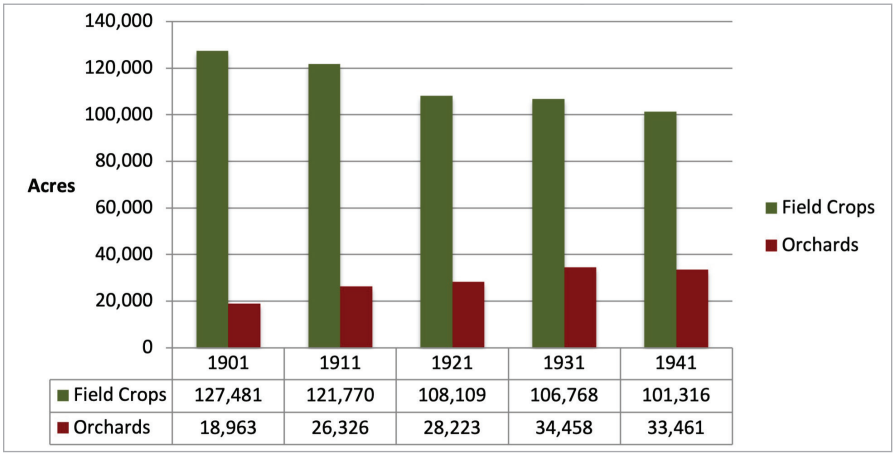
33 Audrey Goucher-Millet, interview with author, November 15, 2012, Windsor, NS; "Odds and Ends," a handwritten reminiscence written by David Chute's father, was given to the author on November 14, 2012 at Chute's home in Berwick, NS. David also kindly showed me around his farm.

34 In the 1941 census, field crops included wheat, barley, oats, rye, flax, and miscellaneous grains, as well as hay, fodder crops, and potatoes and other root crops.

35 Canada, *Fourth Census of Canada, 1901*, vol. 2, *Natural Products* (Ottawa: S. E. Dawson, 1904), Table II: Land Areas of Farms; Canada, *Eighth Census of Canada, 1941*, vol. 8, *Agriculture* (Ottawa: King's Printer, 1944), Table 52: Areas and Conditions of Occupied Farmland, by subdivision, Nova Scotia.

in the very heart of the Kings County fruit-producing area, 2,572 acres were given to field crops while 1,852 were devoted to orchards.[36]

Graph 1. Area of Land Under Field Crops and Orchards, Annapolis Valley, 1901–1941



	1901	1911	1921	1931	1941
Field Crops	127,481	121,770	108,109	106,768	101,316
Orchards	18,963	26,326	28,223	34,458	33,461

Sources: Canada, *Fourth Census of Canada*, *1901*, vol. 2, *Natural Products* (Ottawa: S. E. Dawson, 1904), Table II: Land Areas of Farms; Canada, *Fifth Census of Canada*, *1911*, vol. 4, *Agriculture* (Ottawa: King's Printer, 1912), Table II: Land Occupied According to Tenure and Condition; Canada, *Sixth Census of Canada*, *1921*, vol. 5, *Agriculture* (Ottawa: King's Printer, 1924), Table 79: Farms and Farm Property, 1921, Farm Expenses and Value of Products, 1920, by Counties or Census Divisions; Canada, *Seventh Census of Canada*, *1931*, vol. 8, *Agriculture* (Ottawa: King's Printer, 1936), Table 21: Population, Number and Acreage of Farms, Condition of Land, 1931; Canada, *Eighth Census of Canada*, *1941*, vol. 8, *Agriculture* (Ottawa: King's Printer, 1944), Table 52: Areas and Conditions of Occupied Farmland, by subdivision, Nova Scotia.

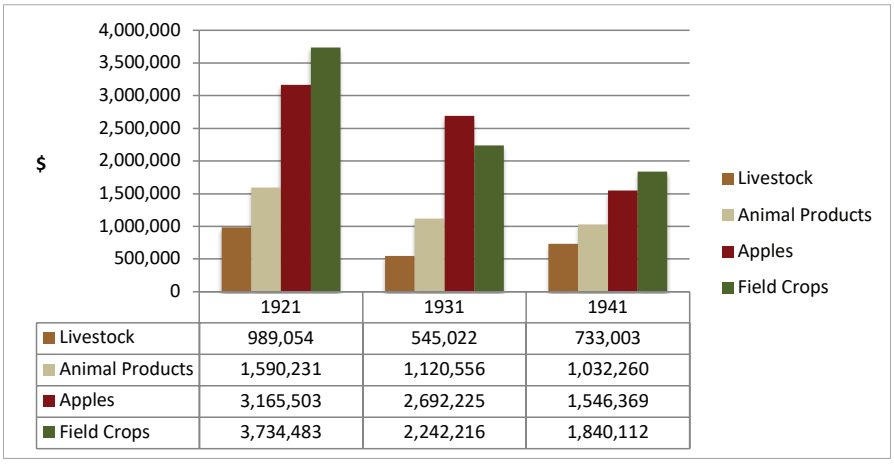
Note: Annapolis Valley here is defined as Annapolis and Kings Counties and thus excludes the part of the apple-growing area in Hants County. Orchard crops are almost entirely apples.

Valley farmers also kept substantial amounts of livestock. As Graph 2 shows, livestock and other animal products continued to be a major portion of the value of farm products from 1921 to 1941. Field crops, meanwhile, were comparable in value to apples, with apples only outstripping field crops in 1931. Clearly, orchards coexisted with field crops and the keeping of animals in the Annapolis Valley.

The 1941 census allows us to see a little more about how the coexistence of orchards, field crops, and animals might have looked on the farms themselves: in other words, how farmers took this mix of possible crops and created a subsistence strategy for their own farm household. In 1941, the census classified farms by type for the first time. As Graph 3 shows, the largest single category of farm in the Annapolis Valley was what the census called "subsistence and combinations of subsistence" farms, by which they meant farms "on which the value of products consumed or used by the farm household amounted to 50% or more of the gross farm revenue" (subsistence farms) or where on-farm consumption and the value of

36 Canada, *Eighth Census of Canada, 1941*, vol. 8, *Agriculture*, Table 52: Areas and Conditions of Occupied Farmland, by subdivision, Nova Scotia.

Graph 2. Values of Livestock, Animal Products and Fruit on Annapolis Valley Farms, 1921–1941



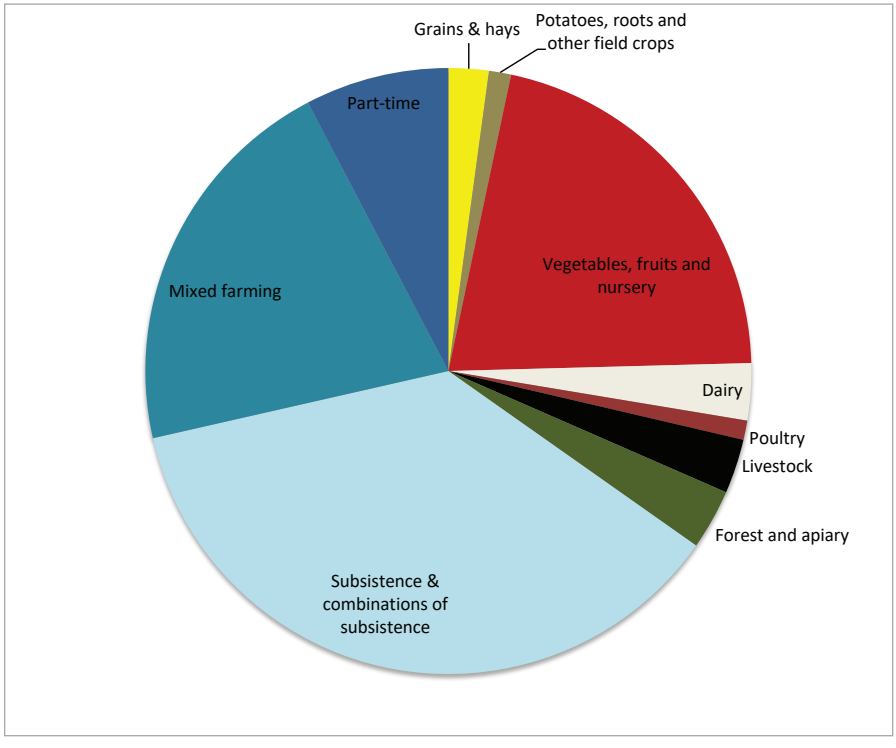
	1921	1931	1941
Livestock	989,054	545,022	733,003
Animal Products	1,590,231	1,120,556	1,032,260
Apples	3,165,503	2,692,225	1,546,369
Field Crops	3,734,483	2,242,216	1,840,112

Sources: Canada, *Sixth Census of Canada*, *1921*, vol. 5, *Agriculture*, Table 79: Farm Expenses and Value of Products, 1920, by Counties or Census Divisions, and Table 87: Fruits on Farms—Trees, 1921, Production and Value, 1921, by Counties or Census Divisions; Canada, *Seventh Census of Canada*, *1931*, vol. 8, *Agriculture*, Table 22: Values—Farms, 1931, Farm Products and Co-operative Marketing, 1930, by Counties, Nova Scotia, and Table 28: Fruits on Farms, Trees, 1931, Production and Value, 1930, by Counties, Nova Scotia; Canada, *Eighth Census of Canada*, *1941*, vol. 8, *Agriculture*, Table 29: Farm Values, Mortgages and Indebtedness, 1941, Value of Farm Products, 1940, and Condition of Occupied Farm Land, 1941, by County, Nova Scotia, and Table 39: Tree Fruits on Farms, Production and Value, 1940, Area and Number of Trees, 1941, by County, Nova Scotia.

one other main product of the farm added up to 50% of farm revenue (combinations of subsistence farms). Farms on which two or more farm commodities added up to 50% of farm revenue were labelled "mixed farms"; as Graph 3 shows, there were as many of these as there were farms specializing in "vegetables, fruits and nursery products," or in other words, where the value of these products added up to 50% of farm revenue. In Kings County, 777 of 2,777 farms specialized in vegetables, fruits, and nursery products, the largest category in this subsection of the valley as a whole; but even there, the second-largest grouping (710 farms) was subsistence and combinations of subsistence, or in other words, farms where a significant portion of the farm household's labour went into feeding themselves.[37] In other words, a substantial portion of farms were producing more than one cash crop and were consuming a large proportion of what they produced, even in Kings County.

37 Canada, *Eighth Census of Canada, 1941*, vol. 8, *Agriculture*, pp. xxv–xxvi and Table 46: Type of Farm, 1940, by County, Nova Scotia.

Graph 3. Types of Farms, Annapolis Valley, 1940



Source: Canada, *Eighth Census of Canada*, *1941*, vol. 8, *Agriculture*, Table 46: Type of Farm, 1940, by County, Nova Scotia.

Did these mixed farms and subsistence farms include apple orchards? Did the vegetable, fruit, and nursery operations produce other crops? We cannot say from this data, but other forms of evidence exist. For instance, in 1916, the NSFGA staged a debate with the proposition "'*Resolved,* that the general adoption of mixed farming, by which is meant the keeping of live stock, and the raising of feed for the same, in addition to fruit growing, is in the best economic interest of the farmers of the fruit-growing counties of Nova Scotia.'"[38] Farmers supply Nova Scotia cities with large amounts of feed, beef and dairy products, those arguing for the proposition pointed out. Mixed farmers could also save on commercial fertilizers by using manure from their own farm, still had an income if the apple crop failed, and had more steady help, as they could employ hired help throughout the year. Those opposed argued for the economic benefits of specialization. Farmers who devoted themselves full time to apple cultivation, given the climate and soils of the valley, would make —in fact, already were making—more money. Land under

38 *Annual Report of the Fruit Growers' Association of Nova Scotia* (1916), p. 51, quoted in Charles C. Colby, "An Analysis of the Apple Industry of the Annapolis-Cornwallis Valley," *Economic Geography*, vol. 1, no. 2 (July 1925), pp. 190–191.

apple orchards was the most valuable in the region; those doing both were, given the cost of specialized equipment, really operating two farms.[39]

Some 15 years later, the debate continued. A royal commission put together by the Nova Scotia government to investigate the fruit industry reported that mixed farming was certainly going on, but that "orchardists … who were trying to keep up with the best modern practice in cultivation, pruning, thinning, fertilizing and spraying, expressed the opinion that when the orchard reached a certain size it was impossible to carry on other general farming in any intensive way without neglecting their orchards." Nevertheless, the commission did not suggest abandoning mixed farming, but confining it to growing enough food for the family, especially as a cushion in case the apple crop failed.[40] Mixed farming, according to some observers, also made better use of land. Geographer Charles Colby, surveying the valley's apple industry in 1925, noted that apples grew best on well-drained, gravelly soils not well suited to field crops and that typically had not been planted with such crops. Conversely, wet, loam soils along the river in the valley bottom and heavy clay soils on dyked marshes grew valuable crops of broad leaf hay without fertilizer. Orchards had not typically taken over lands previously devoted to field crops; rather, they had expanded the area of cultivation. Farmers in the lower valley, Colby claimed, tended toward mixed farming, whereas those with more uplands tended toward the greater profits to be had from orcharding. Photographs of farms reveal this pattern of lowland field crops framed by apple orchards on gentle slopes beyond, while aerial photographs show a patchwork of orchards, fields, and wood lots.[41]

Recall as well our previously encountered unnamed orchardist, travelling the province in the mid-twenties evaluating orchards. He encountered farmers grazing their livestock on the sod under their apple trees, or sowing potatoes there. He found Fletcher Hebb of Bridgewater tending a cranberry bog in addition to his orchard. J. Willis Hebb at Hebb's Cross was keeping Jersey cattle, tapping his trees for maple syrup, and growing strawberries. D. A. McDonald of Whycocomagh, Cape Breton, had sheep; his neighbour J. K. McDonald had an "excellent flower border and a good vegetable garden." Admittedly, all of the above farms were outside the Annapolis Valley and its industrial fruit infrastructure; still, they suggest the ways in which farmers might try to combine orcharding with other forms of farm production. At Bear River, though, right on the western end of the valley, John Harrow shows us what a typical valley orcharding operation might have looked like. The orchardist "found him [Harrow] spraying his upper orchard with lime sulphur." Harrow's other orchard was improved "slightly" from his last visit, "pruned (somewhat) and sprayed with Bordeaux, not tilled. Mr. Harrow plans to mow the grass and leave it on the ground" for fertilizer. His overall strategy: "Mr. Harrow is going in for apples, cows and pigs."[42]

39 Colby, "Analysis," pp. 190–191.

40 Nova Scotia, *Report of the Royal Commission Investigating the Apple Industry of the Province of Nova Scotia* (Halifax: Minister of Public Works and Mines, 1930), pp. 49–50.

41 Colby, "Analysis," pp. 174, 186–188, 190.

42 ECWA, Digital Collections, Orchardist's Notebook, 1924–26, 1900.084-ORC/1.

This correlates with the memories of those who were there. In 2012, the author conducted three interviews in the Annapolis Valley with people involved with the growing of apples.[43] David Crowe was born in 1923 in the Annapolis Valley. An agricultural scientist and tree fruit specialist retired from the Canadian government, he grew up in Berwick on a farm operated by his father. Crowe described his father as a "frustrated writer" and teacher who went into farming somewhat reluctantly. "Apples," Crowe explained, "was the big enterprise, but we had dairy and truck garden, that kind of thing. It was a mixed farm, which was quite common in those days."[44] Laurie Henniger, an apple grower from Sheffield Mills in the valley, explained that though his father and both his maternal and paternal grandfathers grew apples, orcharding was not even their focus. "A lot of the farms in those days grew apples along with everything else, they weren't just strictly apple growers, although there were two or three that were," he said. "But they would have an orchard, and this would be kind of a sideline to the dairy industry or to the vegetable crops, wood cutting, cutting wood in the winter time and so on…. [T]hey would have hired men on the farm to milk the cows, to plant the vegetable crops, to harvest the crops and the rest of it. And the apples would have been a sideline that would have been worked in with it."[45]

In the Annapolis Valley, the technology and methods of industrial agriculture entered into a continuing world of handwork, hard physical labour, and on-farm tinkering. "I was a teamster," David Crowe remembered, "I could do more with a team. I didn't have the strength that the hired men did."[46] David Chute's father, in his handwritten memoir, remembered pruning the orchards with hand saws, "mostly curved saw blades fastened to light poles eight feet long." Once cut, the brush had to be moved onto a rack on a wagon pulled by a horse: "apple brush was miserable stuff to handle, being so bulky it was not possible to get very much on the rack, even with someone tramping it down tighter, often a piece of brush would snap back, and slash in the face, that would make your day!"[47] Fertilizer was applied by hand, hauled around the orchard in buckets. The memoir is full of descriptions of machinery modified by the men of his family, from the complex system for hauling hay into the barn to the washing machine on the back porch driven by a belt attached to an external engine.

Just over 2,000 farmers in the Annapolis Valley were actively spraying their trees in 1941, according to the census.[48] In Chute's father's telling, the sprayer

43 The interviews were done in a semi-structured format. The interviewer had a set of questions broken down into categories: biographical and family life, in the orchards, relations with government, relations with shippers, the business of apples, and the larger community. Specific questions asked depended on the interviewee; the interviewer also sought to allow participants to speak on topics they were interested in. All three interviews were audio recorded on a laptop computer in the interviewees' homes. I am grateful for the time and memories that each generously shared.

44 Crowe, interview.

45 Henniger, interview. Note that Henniger here was relaying stories from his father and grandfather; he was too young to remember the period before the Second World War.

46 Crowe, interview.

47 "Odds and Ends."

48 There were 1,418 in Kings County and 611 in Annapolis, out of a total of 2,777 farms in Kings and 2,175 in Annapolis. There were also 204 in Hants County and virtually none in the province's other counties, where fruit was not generally grown commercially. By comparison, there were 441 tractors, itself probably

was as much a combination of mechanical ingenuity and brute physical labour and bodily punishment than it was an overweening piece of industrial technology. Perry Chute bought the farm's first sprayer in 1912, "just an engine and a pump attached to it," with spray material fed from a "tank, made from large casks … mounted on some sort of axles with old mowing machine cast iron wheels." This was replaced by a used but much larger sprayer, like the earlier one built by the Friend Company of Gasport, New York. "Highly corrosive sprays … pit the sleeves on the pistons and the balls on the valves and their seats," so the cylinders had to be replaced often. The magneto broke down frequently. The hand crank for starting the engine "was directly behind the horses so would be a bad place to be if the team of horses started ahead." Sulphate-based sprays made David Chute's father ill and temporarily blinded him. In 1937–38, Chute's father replaced this unit with a sprayer he built himself, combining a handmade 250 gallon wooden tank with a purchased 4-cylinder pump and engine.[49]

The work done by farm machinery, then, not only took the place of the work of muscle and sweat; it also created new work. Audrey Goucher-Millet was born in 1917 to Roy Finney and Gladys McDonald, who had a farm—"mostly growing apples but … a mixed farm"—in Middleton, Annapolis County. In addition to maintaining an orchard, her father hired himself and his spray unit out to spray other farmers' orchards, sold milk from his herd of cattle to the local creamery, and strawberries ("we could go swimming after we picked a hundred boxes!") and beans to Canadian Canneries in Middleton. A truck came by for butchered hogs that were then sent to Halifax. In the winter, Roy Finney attended the incubator in the basement, carefully turning the eggs so they would warm evenly and hatch, while Goucher-Millet and her sisters tended the live chickens. Another of Goucher-Millet's jobs on the family farm was to separate the milk from the cream using a cream separator, a task David Chute's father remembers observing. The large separator tank, and "very many cone shaped discs" that spun to separate the milk, had to be washed twice a day to keep them sterile, "a messy job … how they were able to do that with such poor conditions, all I can say, bless them!"[50] The Chute farm also produced potatoes and hay, as well as turnips and mangels for the cattle. Goucher-Millet confirms the assertion of the Royal Commissioners that farm families ate their own food as well. Her family purchased "flour, shortening, sugar and spices. But, you know, we had vegetables of all kinds and meat of all kinds. Chicken, every Sunday we ate a chicken and I wouldn't eat a chicken today if you gave me one (laughter). I got sick and tired of it!"[51]

These memories are testimony to the ongoing household nature of production in the valley, right into the later part of this period (which is what Goucher-Millet, born in 1917, and Crowe, born in 1923, remembered). Rebecca Ells's diaries—and

a high number, as tractors did not become essential on Canadian farms until the 1950s. See Canada, *Eighth Census of Canada, 1941*, vol. 8, *Agriculture*, Table 46: Type of Farm, 1940, by County, Nova Scotia, Table 48: Farm Machinery, 1941, by County, Nova Scotia, and Table 39: Tree Fruits on Farms, Production and Value, 1940, Area and Number of Trees, 1941, by County, Nova Scotia.

49 "Odds and Ends."

50 Goucher-Millet, interview; "Odds and Ends."

51 Goucher-Millet, interview.

the farm journal kept by her son, Manning—provide a snapshot of life earlier in the period, around the turn of the century. The Ells' family farm was in Port Williams, Kings County. In 1899, Rebecca's husband Cyde (short for Cyrus) left her and their son Manning at home when he travelled to the gold fields of the Klondike. Rebecca and Manning, with the help of nearby family, their church, and a network of friends and business relations, ran the farm. Rebecca, often with the help of "Fannie" and other hired help, churned and sold butter as well as chickens and eggs. She also cleaned and wallpapered the house, made quilts, baked, preserved plums and pears, and made crab apple jelly. She walked to nearby Wolfville and Kentville to sell her butter, pay bills, and, occasionally, pick up a package from "T. Eaton." The nearby towns were the source of cloth for clothes, suits, coats and "gauntlet mittens" ("his hands will be warm now") for Manning, and sometimes groceries. She also entertained a steady stream of guests who came by for dinner or tea, to help or just to visit. Manning tended the orchard; grew and sold potatoes; looked after the horses, cattle, and pigs; planted the garden; and cut hay, wood, and ice. In a farm journal he kept for a year from May 1901, the apple orchards loomed large. In May, Manning and Roley ploughed, harrowed, and manured the land under the trees. Next, Manning sprayed the trees. By late August, he was in the orchard picking, a process that continued over the next several months. Ribstons and Kings were picked in September, and Golden Russets, Baldwins, and Nonpareils in October. He packed the apples and then hauled the filled barrels to Port Williams Station. The last barrels were sold in February, by which time he was also out in the orchard trimming the trees.[52]

The Ells' system of household production was embedded in a set of social and environmental relations in a particular time and place. From their farm at Port Williams, they could produce a range of farm products, the result of the climate of the valley, its variety of soils, and the work of past generations to shape the land for agriculture (land that had been colonized and taken from the Mi'kmaq, it should be noted). They could draw on nearby towns to serve as markets and places to buy things they could not or did not want to make for themselves. Friends and family were nearby. "Tomorrow," Rebecca wrote on June 26, 1901, "I am invited over the Mrs. Messingers for tea, and Fannie is expected to go home for a couple of days." A week later, "Fannie churned … 12½ lbs [of butter], then washed.… I went down to Bedfords and engaged 20 boxes of strawberries then went to Kent [Kentville] with my butter, came home and did them all up before tea. They look so nice. They were beautiful berries. Then after tea Fannie and I went to the Port [Port Williams] with Mary's butter [Mary was Rebecca's sister]. So on the whole we have had a busy day."[53] Rebecca engaged with a variety of markets in a complex system of selling, as did the family of Audrey Goucher-Millet. A local creamery and cannery meant that Goucher-Millet's family's milk, strawberries, and beans

52 The above from ECWA, Digital Collections, Rebecca Ells Family Fonds, 1986.004-ELL/1, Diary of Rebecca Ells, 1896–1900, 1902, 1914–1915; 1986.004-ELL/2, Diary of Rebecca Ells, 1901; 1986.004-ELL/5, Diary of Rebecca Ells, 1902; 1986.004-ELL/9, Farm Journal; and Ells, "Rebecca Chase Kinsman Ells Diary," in Conrad, Laidlaw, and Smyth, *No Place like Home*, pp. 205–225.

53 Ells, "Rebecca Chase Kinsman Ells Diary," in Conrad, Laidlaw, and Smyth, *No Place like Home*, pp. 216–217.

could be sold and processed locally, while pigs were shipped to Halifax. Rebecca sold butter in Kentville and Port Williams, frequently in 1901 to "A. K. Forsyth," who was perhaps a merchant or possibly just a local acquaintance.[54] Potatoes were sold to Ilsley & Harvie.

Apple sales drew Rebecca and Manning into a global market, though one still based on local interactions. In 1901, before the creation of local co-ops and shipping and marketing companies, Rebecca and Manning's apples were sent from Port Williams Station to England, after which they waited to see how much the fruit would fetch on British markets. "Manning got a cheque cashed that he got from apples sent to Glasgow," Rebecca wrote in January, 1902. "The 16 barrels brought $48.56. Not quite as much as those he sent to London." It was also possible to sell apples locally, and Manning must have had to decide what was more likely to get a good return: "Manning got P.O. Order tonight from Will Rand for $29.20 receipts for Gravenstein apples sent to England in the fall.… There were 22 barrels of apples sent. So that was better than selling them here at $1.00 a barrel as he did the rest." Whatever the amount, it was welcome, because apples provided a much-needed infusion of cash: "Manning went to Wolfville and got cheque cashed for apples sent to London…. So now will be able to pay some more bills."[55]

But though the British market for apples provided a ready cash crop for valley growers, it was not the whole picture. With access to a means of subsistence—their own land—and in the context of an agricultural landscape of family farms, Annapolis Valley growers could engage with a global market for food without being subject entirely to its pressures. They could produce a variety of other products and grow their own food, the better to provide a cushion for bad times. They could embrace the instructions of reformers on how to produce a marketable apple, as Manning Ells did, or treat apples as a sideline, as Laurie Henniger's father and grandfathers did (and as others did, as the constant calls from reformers for improved techniques suggests). They could even go on from household production to become major commercial farmers. In 1911, Cyde Ells returned, destitute, from the gold fields, to find well-tended orchards and a thriving poultry business. Manning Ells went on to become one of the major apple producers in the valley and a prominent member of the NSFGA.[56] The firm of C&M Ells emerged from the context of household production and multiple markets, local and global, that prevailed in the Annapolis Valley up to the Second World War.

54 ECWA, Digital Collections, Rebecca Ells Family Fonds, 1986.004 ELL/8, Farm Account Book. On the importance of neighbourhood and community networks in rural Ontario, see Nicholas Van Allen, "On the Farm, in the Town, and in the City: Nineteenth-Century Networks and Spaces in Rural Middlesex County, Southwestern Ontario" (PhD dissertation, University of Guelph, 2016) and Catharine Anne Wilson, "Reciprocal Work Bees and the Meaning of Neighbourhood," *Canadian Historical Review*, vol. 82, no. 3 (2001), pp. 431–464.

55 ECWA, Digital Collections, Rebecca Ells Family Fonds, 1986.004-ELL/5, Diary of Rebecca Ells, 1902; and Ells, "Rebecca Chase Kinsman Ells Diary," in Conrad, Laidlaw, and Smyth, *No Place like Home*, p. 210.

56 Conrad, Laidlaw, and Smyth, *No Place Like Home*, p. 225. This information is from the editors' commentary on the diary, not from Ells's diary itself.

Conclusion

We do not want to idealize this way of life. Audrey Goucher-Millet remembers her farm years fondly, but notably, she left the farm as a young woman and never went back. David Chute's father clearly remembers these years with some fondness as well, but his reminiscence is full of praise for modern technology that has eliminated so much "drudgery!" from the farm. The analysis does suggest, however, that whatever the pressures and requirements of the British imperial food system, and whatever the power of the industrial ideal, the discipline of market relations worked its way into these farms slowly.

Certainly, government experts and the reformers of the NSFGA counselled techniques, such as careful pruning and spraying, that were designed to produce a perfect global apple. Valley farmers sold to the United Fruit Companies and the firm of W. H. and George Chase; their apples were processed in a network of packing houses; the market for apples in Glasgow shaped the fortunes of the Ells family. Up and down the valley, apples were sprayed with Bordeaux and Arsenate of Lead. Yet production of the global apple happened alongside the growth of field crops and the keeping of livestock. While Manning Ells was in the apple orchard, Rebecca Ells was churning butter for sale, and Audrey Goucher-Millet was eating enough of the family's home-produced chicken to last her into her nineties. Global apples were fashioned on a foundation of household production that mixed commercial crops with subsistence production and the making of things for local sale.

Why was this the case, particularly if we consider with what Nova Scotian apples were competing in the British Empire: tropical fruits and sugar grown on plantations staffed by indentured labour, Indian crops loaded onto ships, in Raj Patel's grim image, by men who were starving because they could not afford the food they were helping to send away?[57] I will offer here only some tentative and schematic conclusions. For one thing, for all that the Annapolis Valley had a long relationship with the British food market, it was still a small player and, compared to growers in western North America, a landscape of long-established farms. As agricultural historian Deborah Fitzgerald has noted, eastern US farms were some of the last to succumb to the industrial ideal; Steven Stoll argues that they sought intensification and efficiency because they did not have lands large enough for the sort of industrialized production that developed further west.[58] In Canada, the fruit farms of British Columbia, first developed starting in the 1890s and marketed to the landless British middle classes as bits of arcadian paradise, appear to have been much more likely to concentrate on apples to the exclusion of other crops.

Subsistence and local production were tolerated by agricultural modernizers in Nova Scotia, who understood that it supported family farms. As well, compared to their compatriots elsewhere in the empire, farmers in Nova Scotia were somewhat insulated from the pressures of the global market by a democratic political system that valued the presence of family farms. As John C. Weaver has shown, British

57 Raj Patel, "Feeding Ten Billion (Jan. 2012 Encore)," CBC, accessed March 6, 2021, https://www.cbc.ca/player/play/2258266799.

58 Fitzgerald, *Every Farm a Factory*, p. 13; Steven Stoll, *Larding the Lean Earth: Soil and Society in Nineteenth-Century America* (New York: Hill and Wang, 2002).

settler colonies—the US, Canada, Australia, New Zealand, and South Africa—were sincere in their insistence that land should be divided up into small chunks that could be worked by a farm family.[59] As owners of their own land, Nova Scotians had at least some degree of independence—much more, in any case, than did workers on banana plantations.[60] Furthermore, Canada, as a white settler colony, had power within the imperial food system; Nova Scotians were shielded by their whiteness. A network of social and environmental factors, in other words, with access to the land (and so a means of subsistence), a rural landscape that provided a variety of markets, and a household system of production, allowed valley farmers to carve out a place both within and without the global capitalist market for food.

59 John C. Weaver, *The Great Land Rush and the Making of the Modern World, 1650–1900* (Montréal and Kingston: McGill-Queen's University Press, 2003).

60 According to the 1941 census, out of 282,658 acres of farmland in Kings County, 265,171 acres were operated by the owner of the farm. Canada, *Eighth Census of Canada, 1941*, vol. 8, *Agriculture*, Table 28: Population, Farm Workers, Farm Holdings and Areas, 1941, by County, Nova Scotia.