“WE HAVE GROWN FINE FRUIT WHETHER WE WOULD OR NO”:

THE HISTORY OF THE WASHINGTON STATE

APPLE INDUSTRY, 1880-1930

By

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"WE HAVE GROWN FINE FRUIT WHETHER WE WOULD OR NO": THE HISTORY OF THE WASHINGTON STATE APPLE INDUSTRY, 1880-1930

Abstract

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By the 1920s, Washington had surpassed New York as the leading apple-producing state in the nation. While boosters argued that the state's success was due to favorable natural conditions, the development of the fruit industry was also the result of corporate investment, real estate promotion, science and technology, the construction of large infrastructure systems, and modern marketing methods. In short, the combined efforts of the railroads, real estate boosters, agricultural colleges, growers cooperatives, and individual farmers working toward the common goal of growing high quality apples made the industry successful.

The period from 1890 to 1930 was an era of experimentation as experts studied various aspects of the apple industry from planting trees to consumer purchases. In this respect, the Washington apple industry was part of the national trend toward industrialization and consolidation. Washington was 3,000 miles from eastern markets, so it benefited from the construction of transcontinental rail lines and the increased demand for commercially-grown fruit in urban areas. Irrigation projects turned the sage-covered

Yakima and Wenatchee valleys of central Washington into the most profitable apple-growing regions in the state. Scientific and technological advancements allowed farmers to grow high-quality, pest-free fruit.

In response to high shipping costs, growers adopted modern marketing and advertising methods, such as branded labels, print ads, and recipe booklets, to convince consumers to pay more for Washington apples when less expensive, eastern apples were plentiful. Growers set Washington apples apart by emphasizing standardization, and they formed cooperatives that worked closely with the railroads to enforce high quality grading standards, coordinate shipments, and open new markets for their fruit. Initially, dozens of varieties were grown in Washington, by the 1930s, as part of the trend toward standardization, only four key varieties were grown commercially. Despite their reluctance, these orchardists gradually moved toward industrialization, and by the 1920s, Washington growers had become the leading apple-producing state in the nation.

This study uses the corporate records of the Great Northern and Northern Pacific Railways, local newspapers, agricultural bulletins from Washington State College, and *Better Fruit*, the leading horticultural magazine in the Pacific Northwest.

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> The conditions existing in the fruit districts have been so favorable for the production of fine fruit that the growers have not felt the need of the finest development of the art. We have grown fine fruit whether we would or no.
> -- Wendell Paddock, *Better Fruit* 1907

As central Washington grower Wendell Paddock stated in a letter to the editor of *Better Fruit*, farmers in Washington grew fine fruit whether they "would or no"; in other words, a farmer could not grow bad fruit if he tried. Washington was a land of fertile soil, long days of summer sun, and clear mountain streams that fed irrigation canals. To many, it was no surprise that Washington produced good fruit; nature conspired to make it so. All one had to do was plant trees and wait for nature to do its job.

This idyllic picture perpetuated by boosters was not a realistic depiction of horticulture in the state. Washington possessed many characteristics that made it an excellent place to grow fruit. Winters were cold enough for trees to become dormant but not cold enough to cause damage. The state had a long growing season, and its soils were rich. But despite these positive assets, the development of the fruit industry was not an accidental occurrence. Rather, it was the result of corporate investment, real estate promotion, science and technology, the construction of large infrastructure systems, and modern marketing methods.

By the mid-twentieth century, the United States' food economy had shifted from produce grown by small farmers and distributed on a regional basis, to an industrial economy on a national and global scale that was increasingly controlled by large corporations. The Washington apple industry has been part of the national trend toward

industrialization and consolidation. At the turn of the century, Washington was an unlikely candidate to become the leading apple producing state in the nation because, in 1900, that distinction belonged to New York. Apples were ubiquitous in the nineteenth century, with many farms possessing their own small orchards for personal use. Commercial orchards in places such as upstate New York catered to urban dwellers, and urban consumers purchased apples grown within a few hundred miles of where they lived. Apples were widely available for several months each year. Because of their long storage life, they were the one fresh fruit Americans consumed on a regular basis. Washington was over 3,000 miles away from urban markets in the east. Refrigerated technology was still experimental, and the high cost of rail transportation forced Washington growers to charge more for their apples than their eastern counterparts. Why then, would consumers pay more for a Washington apple, when less expensive, local apples were available?

By the 1920s, Washington had surpassed New York to become the leading apple-producing state in the nation. Today, Washington produces 59 percent of the apples grown for commercial sale in the United States.[1] This industry has been an integral part of Washington throughout the twentieth century, and apples have become synonymous with the state. But this process did not happen overnight. Instead it was created by the combined efforts of the railroads, real estate boosters, agricultural colleges, growers

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[1] In the 2007-2008 season, Washington produced 5.4 billion pounds of apples. The second most productive state was New York, which produced 1.15 billion pounds. National Agricultural Statistics Service Press Release, August 12, 2008, http://www.nass.usda.gov/Statistics_by_State/Washington/Publications/Current_News_Release/appleaug.pdf [accessed March 12, 2009].

cooperatives, and individual farmers working toward the common goal of growing high quality apples.

Though Central Asian in origin, apples have been present in North America since the colonial era, and they became an important symbol of settlement and "civilization." Since fruit trees take several years to mature, their presence in town sites symbolized permanence and the conquest over what settlers had perceived as a raw, wild land. The connection with apples is embodied in the story of Johnny Appleseed, who traversed the Midwest in the early nineteenth century, planting apples and making the landscape more familiar to newly transplanted settlers in the process. Apples had a practical function as well by providing families with fresh and dried fruit, and they were popular for their by-products such as hard cider.[2]

As Europeans settled the continent, they continued to bring familiar crops, such as apples, with them, and the Pacific Northwest was no exception. The first apple trees in the region were reportedly planted by Hudson's Bay Company at Fort Vancouver in 1826. The company experimented with agriculture as a cost saving measure to satisfy the tastes of its employees without incurring the large cost of importing food supplies, and many Hudson's Bay Company employees chose to remain in the Northwest to farm, providing crucial agricultural assistance to missionaries and other early settlers in the region.[3] By the late 1830s, both the Whitmans and the Spaldings had obtained apple

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[2] William Luce, *Washington State Fruit Industry . . . A Brief History* (N. p., 1972), 4.

[3] James R. Gibson's *Farming the Frontier: The Agricultural Opening of the Oregon Country 1786-1846* (Seattle: University of Washington Press, 1985) provides a

seeds from Fort Vancouver, and they planted them at their missions in Walla Walla and Lapwai. Jesuit missionaries also planted apples at their mission near present-day Tumwater, Washington, in 1848.[4]

Orchard growth during the last half of the nineteenth century was slow. The first grafted trees of commercial quality were transported across the continent from Iowa to Milwaukie, Oregon, by the Lewelling family in 1847. The Lewellings started the first commercial orchard in Oregon Territory, and they sold saplings to other settlers and shipped apples to San Francisco to feed the Forty-niners. By the 1850s and 1860s, orchards had been widely planted throughout the Pacific Northwest. Apples were widely distributed throughout western and southeastern Washington, with greater concentrations in areas such as Clark and Walla Walla counties. Farmers grew a number of varieties including Baldwins, Gravinsteins, and Spartans, mostly for home use or for sale within the region.[5] During the 1890s, however, three forces -- railroads, the construction of irrigation systems, and eager real estate boosters – converged and ultimately encouraged the growth of commercial orchards.

Railroads were vital to the development of the apple industry. They were not only a critical link to markets outside the region but also served to attract new settlement and investment to the region. The Northern Pacific Railway arrived in Yakima in 1885, while the Great Northern Railway constructed a line through Wenatchee in 1893. Western

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comprehensive study of the Hudson's Bay Company's agricultural pursuits in the Northwest.

[4] Luce, *Washington State Fruit Industry*, 4.

[5] Ibid., 6.

railroads relied on freight for revenue, so they had to create an industry where none existed. Irrigation-intensive agriculture seemed to promise the most favorable returns.[6]

The Yakima and Wenatchee Valleys, the two regions in Central Washington that eventually became the largest and most important apple producing regions in the state, were sage-covered deserts that received less than ten inches of rain each year. Experiments by early settlers had shown that these valleys possessed the ideal climate and soil for apple cultivation. Only water was lacking. Land speculation and the arrival of railroads fueled interest, and the construction of large-scale irrigation systems in the 1880s and 1890s supported the expansion of orchards into previously undeveloped areas. In 1885, work began on the Sunnyside Canal in the Yakima Valley, and in Wenatchee two major projects, Gunn's Ditch started in 1896 and the Highline Canal started in 1902, drew water from the Wenatchee and Yakima Rivers, respectively, and provided water for newly planted orchards there.[7]

Real estate boosters were another important factor in regional development. Both the Northern Pacific and the Great Northern worked in concert with local boosters and land speculators to use railroad revenues and business connections to finance irrigation projects in the region. Railroads and irrigation canals were welcomed improvements because they increased land values, making real estate investments more lucrative.

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[6] Claire Strom, *Profiting from the Plains: The Great Northern and Corporate Development of the American West* (Seattle: University of Washington Press, 2003), 8, 51.

[7] Amanda L. Van Lanen, "'It was a time when the promoter promoted': Irrigation Projects in Wenatchee, Washington, 1890-1908" (master's thesis, Washington State University, 2004) 20, 23.

Boosters, who worked for railroads or local real estate companies, promoted settlement through attractive brochures that promised farmers a chance at the good life. Farmers were sold on the idea of independence and self-sufficiency, and orchards provided an idyllic backdrop for raising strong, healthy families.

From the beginning, however, orchards were a capitalist enterprise. Orchards required high start-up costs, and trees did not begin bearing until five to seven years after they were planted. But farmers were not the only ones concerned with making a living. Irrigation systems were expensive to maintain, banks wanted returns on their loans, and railroads expected to make a profit from freight revenue. Contrary to the message promoted by booster literature, this was not a system where individualism could reign. Instead, individuals had to conform to the system for the greater good of all. Efficiency was the watchword of the era.

As early as the 1890s, railroads, boosters, horticultural experts, and some growers began to push for standardization and improved quality control measures in orchards. Local markets were rapidly becoming saturated, so growers looked to urban eastern markets as an outlet for their produce. Shipping costs were high, so it paid to market only the highest quality fruit. Apples that were small, wormy, or discolored were not suitable for market. In order to achieve a level of quality that could demand high prices, growers had to overcome certain aspects of their natural environment. Boosters told prospective growers that orchards were easy money. In fact, much to many growers' dismay, orchards required a high degree of specialized horticultural knowledge. Trees had to be pruned, fertilized, and sprayed, for example. Although Washington was initially touted as a pest-free paradise, insects, fungi, and other orchard disease took their toll. Farmers were

often unfamiliar with the array of chemical pesticides and fungicides available. And then there was the question of what trees to plant. Dozens of apple varieties could be purchased from local nurseries or by mail order, but farmers often did not know which trees were best suited for local growing conditions or which apples were best suited for storage and long-distance transport.

Education was critical if farmers expected to succeed. Agricultural colleges experimented with chemical sprays and fruit varieties to determine which were best for the region. Agricultural bulletins, newspapers, and *Better Fruit*, the main horticultural journal in the Pacific Northwest, presented these findings to their readers along with basic advice on how to plant and prune trees. Agricultural colleges, such as Washington State College, also offered agricultural seminars, and railroads sponsored demonstration trains, exhibits and lecturers that traveled from town to town disseminating information. During the Progressive Era, there was a growing trend toward professionalization in all fields, including agriculture. Experts encouraged farmers to adopt new, scientific methods of agriculture that would make farming more efficient. As historian Robert Wiebe has argued, this widened the gap between the professional class and the non-professional class. "Sometimes inert in the face of change, sometimes hostile to the strange innovations abroad," wrote Wiebe, "the countryside resisted the new ways in their occupations."[8] Washington farmers were no different, and some resisted the advice of university trained experts. They persisted in planting dozens of different fruit varieties,

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[8] Robert H. Wiebe, *The Search for Order, 1877-1920* (New York: Hill and Wang, 1967), 131.

when experts advocated three or four. Others refused to spray their trees, even though horticulturalists warned of pests.

Despite the reluctance of some farmers to adopt modern farming methods, growers faced pressure from both experts and other growers in their communities to conform to scientific recommendations. Insect infestations, for example, impacted all orchards, and one farmer's refusal to spray could have a grave impact on his neighbors' crop. Likewise, if growers shipped poor quality apples to consumers, it hurt the reputation of the entire region. Contrary to the boosters' sales pitches, orchards were not easy to maintain, and many growers found themselves struggling. Some who purchased orchards had no prior farming experience and had to rely heavily upon expert advice.

The 1910s and 1920s were an era of experimentation in the industry as farmers and agricultural experts studied all aspect of the apple industry from the time a tree was planted to when a consumer purchased the fruit to discover what worked best. There was not always consensus between growers, but they all wanted to achieve the same goal: to sell their fruit. There was, as Robert Wiebe has written, a "trend to order" during the Progressive era. Like progressive-minded reformers, university trained experts, railroad officials, wholesalers, and some growers realized that cooperation and organization were necessary on all fronts if the industry was to overcome the natural environment and geographic distance from primary markets. Despite resistance from some growers, the process of growing apples became more standardized throughout the early twentieth century. Grading standards were established and widely accepted by the 1910s. Horticultural agents were hired to enforce spraying regulations and inspect outgoing shipments of fruit to make sure the fruit in the box matched the grade on the label.

As early as 1894, growers began forming cooperatives to develop plans for standardizing production and marketing Washington apples outside of the region. By 1910, there were about twenty-five such organizations in Washington.[9] These associations discussed issues such as the efficiency of storage and packing methods, and apple prices. Growers were at a disadvantage because of their distance from markets: it was difficult for a Washington grower to establish business connections with wholesalers in New York City or Chicago. They had to rely upon sales agencies and commission agents to sell their fruit to eastern wholesalers. While these agents were essential to the system, growers often distrusted them because they suspected that some of them were dishonest. If a carload of fruit was damaged in transit, for example, a grower had to take the shipper's or the sales agent's word. They had no way of knowing if the damage was real or if an unscrupulous agent had defrauded them by selling the carload of fruit at full price and pocketing the profits. Cooperatives were a solution to this problem. Farmers could band together and market fruit themselves, thereby eliminating the middleman.

Cooperatives also implemented advertising campaigns. Boxed apples from Washington were nearly three times the price of New York apples, so growers had to convince consumers that their apples were worth the higher price. Growers did this by marketing a higher quality fruit that was blemish free and packaged neatly and attractively in boxes. By the 1910s, growers were also successfully employing brand-names to aid in consumer recognition of their products. In 1916, the Northwest Fruit Exchange became the first cooperative to develop a nationally recognized brand with its

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[9] Joseph Waldo Ellison, "The Cooperative Movement in the Oregon Apple Industry, 1910-1929," *Agricultural History* 13, no.2 (April 1939): 77.

Skookum Indian logo.[10] Slogans and advertisements also promoted the health benefits of apples and encouraged consumers to eat apples often. The problem, argued one promoter, was not overproduction, but underconsumption.[11] The industry needed to create new demand for its fruit instead of waiting for consumers to come to them.

Both the Great Northern Railway and the Northern Pacific Railway were also highly involved in promoting Washington apples. Like growers, they had a vested interest in the success of the industry. In addition to providing the transportation, railroads provided assistance with storage and marketing. James J. Hill, president of the Great Northern Railroad, had a keen interest in agriculture, and he helped sponsor a National Apple Show, held in Spokane, Washington, from 1908 to 1914. This and several smaller fairs helped the company to promote scientific advances in agriculture, which translated into larger yields and increased profits.[12] The railroads closely monitored apple markets and the problems within the industry. Though the railroads were not in a position to solve problems of storage and marketing, they maintained an active correspondence with growers and encouraged growers to form cooperatives to solve these problems themselves.

The role of railroads in the development of national industries has not been explored in-depth. Recent scholarship such as Claire Strom's *Profiting from the Plains*

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[10] John Fahey, *The Inland Empire: The Unfolding Years 1879-1929* (Seattle: University of Washington Press, 1986), 114.

[11] U. Grant Border, "Co-operation in Advertising the Apple," *Better Fruit*, 8 no. 3 (September 1913): 18.

[12] Strom, *Profiting from the Plains,* 126-127.

has begun to examine the complex relationship between railroads and agriculture. While much has been written on the development of the apple industry in Washington by everyone from horticulturalists, to agricultural economists, to historians, these studies do not incorporate the railroad's perspective. In local newspapers and magazines such as *Better Fruit*, farmers aired their grievances, and they had many reasons for concern: high shipping costs, lack of storage, dishonest sales agents, and insects. Crops went through cycles of good years, when prices were favorable, and bad years, when there were more apples than the market could bear. Natural cycles, distance from markets, and consumer preferences were not things that growers could control. Many farmers recognized their interconnectedness with railroads, for without railroads, the industry could not exist. When times became tough, however, the railroads became a target for growers' dissatisfaction. While railroads have been vilified, correspondence from the Great Northern and Northern Pacific archives shows that the railroads were concerned about the success of the industry and at times went to great lengths to appease growers.

In recent years, Americans have become concerned with the origins of their food, and they are no longer content to purchase whatever cellophane wrapped produce happens to be at the local supermarket. Newspapers such as the *New York Times* routinely carry stories on the growing popularity of organic farms, the merits of eating locally-grown produce, and the pitfalls of industrial farming. Books in the popular press such as Michael Pollan's *The Omnivore's Dilemma*, and Eric Schlosser's *Fast Food Nation* examine how the industrialization of food has changed the socioeconomic fabric of the United States. These popular works discuss the problems associated with an

industrialized food supply, but they fail to consider how and why the nation's food supply became industrialized in the first place.

Historians such as Steven Stoll and Deborah Fitzgerald have explored the origins of industrialization of the citrus fruits and wheat respectively. Stoll focuses on the environmental, social, and political ramifications of industrial growth and the ways in which growers exploited local advantages such as cheap labor and favorable climate to make California the largest fruit producer in the nation. Fitzgerald, on the other hand, uses the bonanza farms of Montana as a case study for the industrialization of wheat. Both of these commodities became industrialized in the early twentieth century, at the same time Washington was developing its apple industry, and they are all part of a larger national trend toward large-scale, standardized production. An examination of the Washington apple industry illuminates this trend in a way that Stoll and Fitzgerald's studies do not. Stoll examines the abundance of literature produced by growers and agricultural experts, but the contributions of railroads to the development of the industry are overlooked. Fitzgerald makes a strong argument for the industrialization of wheat, but wheat is a much different commodity than fruit. Wheat is not perishable, nor is it sold directly to consumers in its harvested form. It is milled into flour and used to manufacture a variety of products. Wheat farmers did not have to market their wheat directly to consumers, and advertising was left to flour mills and other food processors. Wheat growers participated in a horizontally integrated market, and their only contact was with the local elevator or flour mill. The apple industry, on the other hand, was more vertically integrated as apple growers had direct involvement with the marketing of their crops.

The period from 1890 to 1930 was disorganized and experimental, but those in the industry worked to create an efficient, organized system. Growers in Washington were influenced by and struggled to make sense of larger national trends. They benefited from the construction of transcontinental rail lines, and urbanization increased the need for commercially grown fruit. Scientific and technological advances allowed farmers to grow high-quality, pest-free fruit. Modern marketing methods, such as branding, increased consumer demand, but many growers remained skeptical of these advances. Attempts to form statewide marketing organizations were thwarted by competition between major growing regions. Growers started numerous regional cooperatives, but many growers refused to join and maintained their independence. In 1923, for example, business professor Harold Maynard estimated that half the apples in Yakima and a third the apples in Wenatchee were still being handled by cash buyers, not cooperatives.[13]

Despite their reluctance, growers in Washington gradually moved toward industrialization. By the 1910s, grading standards had been established and were widely accepted, and farmers learned how to properly care for their trees. Attempts at statewide cooperatives failed, and many growers remained wary of cooperatives. But cooperatives still were formed on a regional level, and they successfully promoted standardization and the use of modern advertising. Cooperatives and individual growers established stable, trustworthy market relationships with eastern and international buyers. By the 1920s, the industry was not as orderly as some had hoped, but an industry had been established

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[13] Maynard stated that a sizable portion was being handled by eastern consignment houses too, but he provided no specific figures. Harold Maynard, *Marketing Northwest Apples* (New York: The Ronald Press Company, 1923), 24, 30.

nonetheless. Washington growers had overcome the obstacles of local growing conditions and distance from geographic markets to become the leading apple producing state in the nation. It took a great deal of organization and the cooperation of railroads, growers, and agricultural experts to make Washington a viable competitor on national and world markets.

Chapter 1

How the Apple Came to Washington

> Half the beauty and pleasure that brightens the life of youth and childhood, it is not too much to say, is found in the orchard of the old homestead – the sight of the trees in bloom, the waiting and watching for the first ripe fruit, the in-gathering of the fruit in the fall, and the storing of it away in bin and cellar for use in the winter around the ingleside.
>
> – Dr. J.R. Cardwell, *Oregon Historical Quarterly*, March 1906

From apple pie to Johnny Appleseed, apples have long been intertwined with American culture and folklore. Perhaps no other fruit is so ripe with symbolism and meaning as the apple. Though the apples most of us are familiar with did not originate in North America, they have been present since the early seventeenth century when Europeans began to settle and farm. As Americans moved across the continent throughout the seventeenth, eighteenth, and nineteenth centuries, apples trees were nearly as important to families as grain crops such as corn and wheat.

There are approximately forty species of apples classified under the scientific genus *Malus*. A trip to a local supermarket provides a small example of the diversity within the domestic species, *Malus pumila*. Apples come in a variety of colors (red, green, yellow, pink), sizes, and flavors (tart or sweet), and horticulturalists have recorded over 20,000 separate cultivars worldwide.[1] Many thousands more have been developed

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[1] Barrie E. Juniper and David J. Mabberly, *The Story of the Apple* (Portland, OR: Timber Press, 2006), 34, 50. A cultivar is a plant variety that develops as the result of human cultivation. These plants have distinctive characteristics that can be replicated through reproduction, but they are not considered to be a separate species. This is similar

by horticulturalists in the U.S., Canada, Japan, and other apple growing regions. Although there are many species of wild apples, several of which are native to Europe and North America, one species is largely responsible for the domestic apples that come to our tables: *Malus sieversii*.[2]

M. sieversii, named for the German-Russian scientist Ivan Sievers who first classified the species in 1793, are native to Kazakhstan and once grew in great fruit forests.[3] As early as the 1940s, Russian scientist Nikolay Vavilov argued that sweet domestic apples evolved from the apple forests of Central Asia, and recent genetic testing has supported the theory that different variations of *M. sieversii* could be the source of all domestic apples. While hybrids between *M. sieversii* and other species occur, they are rare, largely because each species flowers at slightly different times which makes cross-pollination unlikely. While it is possible that some cross-pollination may have occurred, very few economically viable cultivars have resulted from such cross-breeding.[4]

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to domesticated dogs. Although they come in a variety of breeds, they are all the same species, *Canis lupus familiaris*.

[2] In their book *The Story of the Apple*, Barrie Juniper and David J. Mabberly state that while the name *Malus domestica* is often used to refer to domestic apples, *Malus pumila* is the correct term. *Ibid*., 17-18.

[3] In the 1940s when Vavilov studied the forests, they covered an estimated 125,000 acres. As of 2003, less than 10,000 acres remain. *Ibid*., 56.

[4] In the U.S. there are some known cross-breeds. Examples include the Maypole which may be a cross between *M. pumila* and *M. coronaria*, and Wealthy, a cross between *M. pumila* and *M. baccata*. Additionally, rootstocks from North American species were often chosen when grafting new trees because they were better suited to local climes. The use of local rootstocks, however, does not affect the genetic make-up of the apple which has been grafted to that stock. Generally though, hybrids are not desirable. North American apples lack the gene sequence necessary for producing sweet fruit, and when crossed with other breeds, the genes for tiny, acidic fruit tend to

M. sieversii is an unpredictable species that produces a variety of fruit: red, green, and yellow, large and small, sweet and sour. Seeds planted from a fruit do not grow true to the parent plant. A seed from a large tart fruit, for example, might yield a small sweet fruit. To produce a predictable, uniform product, it is necessary to graft branches from the parent tree onto new roots. Human selection, migration, trade, and conquest spread the apple from Central Asia to Europe and East Asia, where it was cultivated by the Chinese, Persians, Greeks, and Romans, all of whom mastered the art of grafting.[5] Through grafting, fruit selected for desirable qualities, such as sweetness, could be replicated in the orchard. Native European crab apples were small and too bitter to eat raw, but it is likely that they were cooked or fermented for food and medicinal uses long before *M. sieversii* arrived. These small apples, however, were not favored by the invading Romans, who planted sweet varieties of grafted apples trees. Although many orchards fell into disuse after the fall of the Roman Empire, Europeans continued to grow trees, particularly at monasteries where important horticultural skills such as grafting were preserved.[6]

By the time Europeans began migrating to North America in the seventeenth century, apples had become a staple commodity because of their versatility. Apples can

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dominate. Juniper, *The Story of the Apple*, 24,46,53; Diamond, "Migrations: Henderson Luelling and the Cultivated Apple, 1822-1854," 80.

[5] Some of the earliest evidence of grafting trees is from Persia 2500 years ago, although grafting grape vines was understood at least 3800 years ago. Juniper, *The Story of the Apple*, 91; Joan Morgan and Allison Richards, *The New Book of Apples* (London: Ebury Press, 2002), 12-13.

[6] Morgan, *The New Book of Apples*, 23-26; Diamond, "Migrations: Henderson Luelling and the Cultivated Apple, 1822-1854," 75.

be stored for several months in cool cellars, dried, cooked into butters and preserves, or distilled into cider or vinegar. In an age when municipal water supplies were tainted and spawned outbreaks of disease, hard apple cider, or applejack, was the beverage of choice. Livestock, usually hogs, were fed the pomace, the pulp that is left over after cider pressings. In addition to being a common seasoning, cider vinegar was a key ingredient in pickling other produce for long-term storage. Apples also had medicinal uses in items as varied as skin creams and cough syrups.[7] Typically, farmers planted six trees for each person in the family to supply their personal needs, and in terms of usefulness, apples were nearly as important as grain crops.[8]

Europeans who left for North America took with them the plants and animals that had been central to their subsistence at home. It is no wonder, then, that apples were included. The first known orchard in the British colonies was planted in Boston around 1625. In his 1654 book, *Wonderworking Providence of Sion's Savior in New England*, Edward Johnson reported that in 1642, an estimated 1,000 acres of orchards and gardens had been planted in New England. By the eve of the American Revolution, apples were planted in all thirteen colonies, with the best orchards in New York and Pennsylvania. Each successive immigrant group brought orchard stock from its home countries – Britain, Germany, Sweden, Holland, and others – which created a wide diversity in

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[7] Morgan, *The New Book of Apples*, 70.

[8] Diamond, "Migrations: Henderson Luelling and the Cultivated Apple, 1822-1854," 33.

colonial orchards.[9] Early American orchards were usually started from seedlings. Though there are documented instances of grafting in the colonies as early as 1647, it was not widely practiced until the nineteenth century.[10] Colonial Americans, like the English, took great pride in local apple varieties. Colonists argued that the best local apples were hybrids of wild North American apples and European imports, thus asserting the supremacy of local farmland and their mastery over indigenous species.[11]

As Americans moved west throughout the eighteenth and nineteenth centuries, they took apples with them. Apples were practical because of their versatility, but they also represented permanence and mastery over the new landscape. As historian Robert Price writes, "no other fruit could be started so easily, and nor could be put to so many essential uses,"[12] but establishing an orchard took time. Even the most diligent farmer had to wait up to seven years before realizing a crop. Perhaps because of the time needed for trees to reach their maturity, land grants in the old Northwest Territory required settlers to plant at least fifty apple or pear trees in exchange for the deed to the land, thereby "encouraging homesteaders, literally as well as metaphorically, to put down roots."[13]

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[9] Morgan, *The New Book of Apples*, 70.

[10] S.A. Beech, *The Apples of New York,* vol. 1(Albany, NY: J.B. Lyon Company, 1905), 9-10.

[11] Diamond, "Migrations: Henderson Luelling and the Cultivated Apple, 1822-1854," 76.

[12] Robert Price, *Johnny Appleseed: Man and Myth* (Bloomington, IN: Indiana University Press, 1954), 39.

[13] Juniper, *The Story of the Apple*, 169-170.

The introduction of apple trees into the Pacific Northwest occurred in much the same way domesticated apples were introduced to the rest of the North American continent: settlers brought apple seeds and saplings with them as they moved to new locations. The Hudson's Bay Company (HBC), which established some of the first settlements in the Pacific Northwest, was key to the development of agriculture in the region. Driven by a need to cut costs and increase profit, the Hudson's Bay Company, under the leadership of Governor George Simpson, began exploring the possibility of farming Fort Vancouver and other settlements. These early agricultural experiments demonstrated the farming potential of the region. Not only did the company grow forage crops such as timothy and alfalfa, it also grew a number of staples to feed its employees. Fur traders west of the Rocky Mountains had difficulty obtaining food provisions. Those east of the Rockies had access to bison, Indian corn, and provisions from eastern farms, transported via canoe or steamboat, but trappers west of the mountains did not have this luxury. While there was an ample supply of food in the Northwest, company employees did not care for salmon, the regional staple. To keep its men content, HBC imported foodstuff from Eastern Canada and England; however, shipments of bulky commodities around Cape Horn were expensive and impractical. To remedy this problem, in 1811 the Hudson's Bay Company founded an agricultural settlement on the Red River in present day Manitoba, Canada. The Red River Colony was so successful that by the mid-1830s

the colony produced a surplus, thus encouraging the HBC to adopt a policy of growing food commodities locally. [14]

Although fur trappers and sailors had made several attempts to grow corn and other vegetables in the Pacific Northwest, agricultural production became official company policy after the appointment of George Simpson as Governor of the Northern Departments in 1821. Simpson was a gifted administrator determined to cut company costs through consolidating forts and eliminating unnecessary expenses. Shifting from expensive imports to locally grown food was one way by which the HBC could save enormously. The cost of transporting food from Europe and Canada was so great that Simpson chastised his men for their poor management of provisions and remarked that his men "may be said to have been eating Gold."[15] Between 1822 and 1825, men at Fort Nez Perce (later Fort Walla Walla) ate 700 horses in addition to imported provisions when, according to Simpson, a good garden could have sufficed.[16] Many fur trappers resisted the idea of farming, fearing that it would detract from their main occupation, yet Simpson persisted in his program of reorganization. He believed that local food production would have many benefits including reducing company expenses, freeing up cargo space for more furs, and possibly even creating new commodities for export.

By the late 1830s nearly 1,000 acres were under cultivation at Fort Vancouver, supplying fur trappers with a wide agricultural bounty including grains, forage crops for

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[14] James R. Gibson, *Farming the Frontier: The Agricultural Opening of the Oregon Country 1786-1846* (Seattle: University of Washington Press, 1985), 13-14.

[15] Quoted in Ibid., 16.

[16] Ibid., 16-17.

cattle and pigs, and fruits and vegetables.[17] Upon her arrival at Fort Vancouver in September, 1836, Narcissa Whitman was pleasantly surprised at the abundance she found, especially when contrasted with "the barren sand plains through which we had so recently passed." The Whitmans were treated to this bounty, which Narcissa described in her journal:

> Here we find fruit of every description. Apples peaches grapes. Pear plum & Fig trees in abundance. Cucumbers melons beans peas beats cabbage, taumatoes, & every kind of vegitable, to numerous to be mentioned. Every part is very neat & tastefully arranged fine walks, eich side lined with strawberry vines.[18]

Other travelers commented on the abundance as well. Reverend Samuel Parker, who visited Vancouver the same year as the Whitmans, commented that fruits "flourish and prove that the soil and climate are well adapted to the purposes of horticulture."[19] The success of such a large variety of crops reinforced George Simpson's belief in the agricultural potential of the region, as visibly demonstrated the bounty of crops grown at Fort Vancouver.

Fruit was a precious commodity for settlers arriving via the Oregon Trail. "Some of the earliest settlers in the Willamette Valley," wrote horticulturalist J.R. Cardwell, thought that "nothing more thoroughly and painfully accentuated their isolated condition

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[17] Ibid., 36-37.

[18] Narcissa Prentiss Whitman, *My Journal, 1836*, 7th ed. (Fairfield, WA: Ye Galleon Press, 2004), 50.

[19] Grace Edith Miner, "A Century of Washington Fruit," (master's thesis, University of Washington, 1926), 6.

than the absence of fruit trees on their newly made farms."[20] Fruit achieved almost mythic proportions in these settlers minds, as evidenced in the romantic tale of how apple seeds made their way to Fort Vancouver. Several versions of the story exist, embellished over the years by countless retellings. According to one version, the evening before their departure for Oregon, several young Hudson's Bay Company employees attended a dinner reception in London. One young lady at the party, smitten with the young gentleman beside her, saved the seeds from the apples served at dinner, gently wrapped them in paper, and tucked them into the man's vest pocket as a token of remembrance. Upon his arrival at Fort Vancouver, the young man discovered the seeds and gave them to the company's gardener for planting. The particular details -- such as the number of gentlemen involved, the reason they kept the seeds, and the date the seeds were planted -- vary from source to source.[21]

What is known for certain is that the earliest version of this story came from Henry Bingham, a missionary who visited Fort Vancouver in 1829 after sailing from Hawaii. According to Bingham, Captain Aemilius Simpson, head of HBC's Pacific coastal trade, planted the seeds himself sometime in 1827. Narcissa Whitman heard the story of the apple trees' origins when she visited Fort Vancouver in 1836 and recorded it in her journal. "Here I must mention the origin of these Apples and grapes," she wrote. "A gentleman twelve years ago, while at a party in London put the seeds of the grapes

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[20] J.R. Cardwell, "The First Fruits of the Land, Part I," *Oregon Historical Quarterly* 7, no. 1 (1906): 32.

[21] Ibid., 28-29; Miner, "A Century of Washington Fruit," 4-5; Whitman, *My Journal, 1836*, 50.

and apples he ate in his vest pocket and soon after took a voyage to this country and left them here. Now they are greatly multiplied."[22] This places the plantings as early as 1825. Other accounts place the first planting somewhere between 1825 and 1828. Small apple trees and grape vines were reported at Fort Vancouver in 1828, which makes Bingham's account seem plausible. There is another possible origin for the apple trees at Fort Vancouver: the Horticultural Society of London. It is know that Fort Vancouver received shipments of seeds from London sometime in 1826 or 1827 and again in 1828; however, the exact contents of these shipments is unknown.[23]

By the mid 1830s, five trees were bearing fruit, and as late as 1971, at least one of these trees was reportedly still in existence. In 1911, the state of Washington fenced and memorialized the tree in question.[24] Marcus Whitman received seeds from these trees which he planted at his mission at Wailatpu. An inventory of the mission prepared by Henry Spalding in preparation for its closure after the Whitman's death in 1847 includes, "one farm of 30 acres, fenced, cultivated, ditched; . . . Garden orchard of 75 apple trees, a

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[22] Whitman, *My Journal, 1836*, 50.

[23] Fort Vancouver National Historic Site, *Cultural Landscape Report*, vol. 2 (October 2003), http://www.nps.gov/history/history/online_books/fova/clr/clrt.htm (accessed September 9, 2007).

[24] The tree was fenced in and relic hunters were prohibited from vandalizing it. The Oregon Historical Society questioned the validity of memorializing the old Vancouver Tree since men who transported grafted trees across the continent, such as Henderson Luelling, were the true progenitors of the fruit industry in the Northwest. "The Oldest Seedling Apple Tree in the Pacific Northwest," *Oregon Historical Quarterly* 12 (March 1911). According to Charles Robinson, Washington state supervisor of horticulture, the Spalding trees were cut down in 1929. William A. Luce, *Washington State Fruit Industry . . . A Brief History* (N.p., 1972), 3-4.

few bearing, heavy ditch for irrigation, Nursery of apple & peach trees."[25] Henry Spalding also planted apple trees at his mission, and in 1837 or 1838 he helped Nez Perce Indians plant trees on the Clearwater River at the mouth of Alpowa Creek in present day Garfield County, Washington.[26] The location of plantings depended largely upon where people settled. Apple seeds were planted at several locations such as the Catholic missions near Tumwater and Yakima, Washington, and at Fort Simcoe and other forts and settlements. Trees for the Ahtanum mission near Yakima were reportedly transported by ship from France to Vancouver, and from there on horseback to the mission.[27] While it was possible that trees may have been transported in this way and planted at the mission, they would have only been of local importance.

These early plantings were tremendously important to the settlers who planted them. As J.D. Cardwell wrote in his history of the Oregon fruit industry, "It is related of some of the earliest settlers in the Willamette Valley that nothing more thoroughly and painfully accentuated their isolated condition than the absence of fruit trees on their newly made farms."[28] Fruit trees were highly important to farmers trying to establish themselves in new settlements, and they were in great demand. Since apple seeds do not produce exact replicas of the parent plant, grafting is necessary to ensure quality fruit

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[25] Marvin M. Richardson, *The Whitman Mission* (Walla Walla: Whitman Publishing Co., 1940), 149-150, cited in Emmett Kaiser Vandevere, "History of Irrigation in Washington" (PhD diss., University of Washington, 1948), 13-14.

[26] William Denison Lyman, *An Illustrated History of Walla Walla County, State of Washington* (San Francisco: W.H. Lever, 1901), 154.

[27] Luce, *Washington State Fruit Industry . . . A Brief History*, 5-6.

[28] Cardwell, "The First Fruits of the Land, Part I," 32.

trees. Grafting requires specialized knowledge not possessed by the average farmer, so farmers turned to trained nurserymen for their orchard needs; these nurseries were the first commercial orchards. The first known nursery in the present day United States was established in New York in 1731 by Robert Prince, a French Huguenot who sold a wide variety of fruits, including apples. The Prince nursery was the standard in horticultural catalogues during the first half of the nineteenth century, and its 1845 catalogue featured 350 varieties of apples alone.[29] While there were other orchards besides Prince's, grafting and fruit breeding was largely a hobby of the wealthy for most of the eighteenth and early nineteenth centuries. By the mid-nineteenth century, however, nurseries had become increasingly common as farmers began purchasing nursery saplings rather than relying upon the unreliable quality of trees produced from seed.[30] While trees were desired for their fruit, planting trees was often a requirement for establishing legal title to land in the Old Northwest. For example, the Ohio Company, formed in Marietta, Ohio, in 1792, set up a "Donation Track" to encourage settlement. In order to claim the 100 acre plots, settlers had to plant at least fifty apple trees and twenty peach trees within three years.[31] Since apple trees take up to seven years before bearing fruit, established saplings provided settlers with a head start. The arrival of experienced nurserymen in Virginia, Indiana, Iowa, and later Washington often signaled an expansion of settlement and commercial agriculture.

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[29] Beech, *The Apples of New York*, 12-13.

[30] Ibid., 13.

[31] Price, *Johnny Appleseed: Man and Myth*, 40.

Johnny Appleseed is often heralded for planting apple trees in the Old Northwest, thereby aiding farmers in their quest to tame the wilderness. His tale has been recounted repeatedly and with varied details. The most familiar version, penned for *Harper's* magazine in 1871 by W.D. Haley, depicts Johnny Appleseed as a lone barefoot wanderer, dressed in rags with sacks of apple seeds in hand. In the late nineteenth century, farmers throughout the Old Northwest claimed to have trees grown from his plantings. Neighbors in Pennsylvania recalled him washing out pomace for seeds, and according to one farmer named Curtis, Appleseed "never secured title to the land for his nurseries. He never grafted any."[32] Herein lies the largest fallacy of the Appleseed myth: since he never grafted trees, most of those he planted from seeds would have grown into trees with small, sour fruit, good only for cider.

The real Johnny Appleseed was born John Chapman in Leominster, Massachusetts, in 1774, and he died somewhere near Fort Wayne, Indiana, in 1845. Unlike the man in the myth, Chapman did not start the first nurseries in the Ohio Valley, for that distinction belongs to Rufus Putnam who opened his nursery in Marietta, Ohio, in 1796, intent on producing grafted trees. Nor was Chapman homeless. He owned or leased several parcels of land in Pennsylvania, Ohio, and Indiana. The first official record of Chapman's tree planting activities date to 1804, when he signed a promissory note to repay a $100 debt back in trees. Like many other settlers, he was a squatter at times who planted trees on land he did not own; by the time he was forty, he held 640 acres in leases and owned two town lots in Mt. Vernon, Ohio. He dabbled in real estate for most of his

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[32] Ibid., 36-37.

adult life, and at the time of his death, he owned 353.88 acres in Ohio and Indiana. He also leased 70 acres in Richland County, Ohio.[33] Chapman was unique for his methods of spreading seedlings across the frontier because while spreading seeds, he also spread the teachings of Emmanuel Swedenborg.[34] Although apples were an important crop, most families did not bring scions with them when they journeyed west. Saplings took up room that could be put to better purposes. Seeds provided a more practical alternative. They were cheap to produce, and they were in high demand by skilled nurserymen as rootstock for their grafts and by farmers who wanted to "jump start" their farms. Chapman, like many others, planted apples seeds in an effort to improve their plots and claim squatters rights.

Despite the praise John Chapman has received in American mythology for his role in distributing apples across the country, the real unsung heroes are the frontier nursery men who painstakingly transported scions, grafted apple saplings, across the country and established nurseries which provided stock for subsequent commercial orchards. Unlike other fruit trees, apples grown from seeds, cuttings, or offshoots will not produce exact genetic replicas of the parent tree; grafting is the only method which will ensure this. Prior to the 1820s and 1830s, farmers relied on apple seeds to supply their

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[33] Ibid., 35-38, 107, 224.

[34] John Chapman was a Swedenborgian, a Christian denomination that bases its beliefs on the writings of philosopher and theologian Emmanuel Swedenborg (1688-1772). Swedenborgians, or New Church, first organized in London in 1787. Chapman was among the first converts in the Midwest and was credited with establishing several churches throughout Ohio. Swedenborgians still have several active denominations in the U.S., Canada, and Britain. For more information see Price, *Johnny Appleseed: Man and Myth*.

farms, and it was common for farmers to recycle the pomace left over from cider making or to save seeds from other sources. The flavor of the fruits produced from these seeds mattered little because most apples were not eaten fresh; instead, they were fermented to produce cider and vinegar, or they were dried, or cooked into preserves and butters. Tart, acidic apples typically produce good cider, making them more desirable.

Although dried apples, brandy, vinegar, and cider were shipped from New England to the West Indies as early as 1741, commercial orchards did not develop until the 1820s. The development of new transportation networks, such as the Erie Canal, coupled with a growing demand from cities like New York, made the export of apple products to urban markets profitable. Because of its geographic proximity to East Coast cities and transportation corridors, upstate New York became a leading commercial apple producer. In 1821, 68,344 bushels of New York apples were exported, valued at $39,966. Commercial orchards were still largely comprised of seedling starts with only a small percentage of grafted trees, and much of the apple crop was used to produce applejack, a cider brandy.[35]

Prior to the temperance movement, cider had been one of the most popular beverages in America. It was consumed at most meals, weddings, funerals, political rallies, and it was traded widely as a portable commodity for those living far from towns. Cider consumption was so pervasive in American life that Gerrit Smith, a temperance advocate and landowner from New York, lamented that cider was "one of the grand

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[35] Beech, *The Apples of New York*, 11-12.

difficulties in the way of the reformation of drunkards."[36] In 1775, ten percent of New England farms had cider mills, and many other farms likely had smaller presses. Commercial applejack production was highest in New Jersey, where 388 distilleries were in operation in 1834.[37] The founding of temperance societies, such as the American Temperance Society in 1826, led to a decline in alcohol consumption. By 1836, more than 8,000 temperance societies claimed over 1.5 million members, about ten percent of the American population. Membership was unevenly distributed throughout the nation, with over a third of all temperance pledges signed by New Englanders. Only 8.5% were signed by Southerners.[38] The regional nature of temperance supporters had a great effect on the developing apple industry in places such as New York. Markets for cider shrank, and many orchards were destroyed, but the demand for high quality grafted trees that produced sweet fruit increased greatly.[39]

Broad national trends such as westward expansion, growing urban populations, and the temperance movement contributed to the rise of commercial apple production and to an increased demand for high quality fruit trees. The temperance movement was the outgrowth of larger concerns in American society as the nation moved from a rural society to an urban-industrial one. Science and technology began to invade the rural

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[36] Quoted in Ian R. Tyrell, *Sobering Up: From Temperance to Prohibition in Antebellum America, 1800-1860* (Westport, CT: Greenwood Press, 1979), 138.

[37] Morgan, *The New Book of Apples*, 153-154,

[38] Ian R. Tyrell, "Temperance and Economic Change in the Antebellum North," in *Alcohol, Reform and Society: The Liquor Issue in Social Context*, ed. Jack S. Blocker Jr. (Westport, CT: Greenwood Press, 1979), 46-47.

[39] Morgan, *The New Book of Apples*, 154.

countryside as farmers . As historian Robert Wiebe explains "railroads, machinery, and scientific advances opened more farmland in the last third of the century than in the nation's previous history."[40] The modern farmer had to adapt to a new agricultural model based on research and efficiency. In his community study of Worcester, Massachusetts, historian Ian Tyrell found that farmers who took temperance pledges tended to be distinguished by their interest in scientific advances and greater agricultural efficiency. They were more likely than their non-temperate counterparts to adopt new practices with an eye toward greater commercial development.[41]

Meanwhile, nurserymen such as Henderson Luelling became important figures in providing nursery stock for both commercial orchards and family farmers.[42] Luelling was born in North Carolina and moved to Indiana when he was thirteen. He, together with his father Mesheck and his brothers, were some of the first horticulturalists in the Old Northwest.[43] After migrating to Iowa in 1837, Luelling set out for Oregon in 1847, orchard stock in tow. Scions are easily transported when dormant with their roots wrapped in cloth, but they must be replanted before the plant emerges from hibernation.[44] Luelling, however, used a different technique. Instead, he planted his scions in a specially

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[40] Robert H. Wiebe, *The Search for Order, 1877-1920* (New York: Hill and Wang, 1967), 15.

[41] Tyrell, "Temperance and Economic Change in the Antebellum North," 50.

[42] According to biographer David Diamond, Henderson Lewelling changed his name to "Luelling" sometime near the end of 1850. Both spellings are common in accounts and records in Oregon and California. Diamond, "Migrations: Henderson Luelling and the Cultivated Apple, 1822-1854," 1.

[43] Ibid., 91-92.

[44] Ibid., 39.

fenced box that fit atop a wagon. Most wagons measured ten feet by four feet, but those who saw Luelling's wagon describe it as being much larger. A specially equipped larger wagon enabled him to transport twenty-one different apple cultivars, along with several other types of fruit trees, in what Luelling's biographer David Diamond refers to as a "botanical ark."[45]

Luelling was not the first to transport trees across the continent. In 1845, William Barlow, another horticulturalist, started out from Illinois with an assortment of grafted fruit trees, hoping to make his fortune in Oregon. Near Independence Rock, Barlow encountered several eastbound travelers. He showed them his nursery wagon, but he became discouraged from taking the trees any farther because, according to the Oregonians, there were "old bearing orchards at Vancouver and in the French prairie." Furthermore, the most difficult portion of the road lay ahead, and the overlanders expressed doubt that he could move his wagon down the Columbia River without dismantling it. This persuaded Barlow to dump the entire contents of his wagon, but when he arrived in Oregon territory, he recognized, much to his chagrin, that not only could his wagon have survived the trip, but there was also a large demand for grafted trees. Barlow made the best of the situation by planting the seeds he still had with him. The next fall he sold all 15,000 seedlings for fifteen cents apiece, a tidy sum, but a great deal less than he might have made from grafted trees. "When I say I lost $50,000.00, I mean just what I say," he later lamented, "I could have made a full monopoly of all the grafted apples and pears on the coast, as California [also] had nothing but seedlings . . . .

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[45] Ibid., 192-193.

Mr. Henderson Luelling, who crossed the plains in 1847, two years later than I did, with substantially the same kind of fruit trees . . . supplied the country as fast as he could," he concluded. Adding insult to injury, in 1835 Barlow purchased one hundred grafted trees from Luelling for $100.[46]

Unlike Barlow, Luelling guarded his trees with care, overcoming the harsh weather, rough trails, and discouraging comments from other emigrants. Luelling and his four wagons, transporting not only his nursery stock but also his pregnant wife Elizabeth and their eight children, traveled at a slower pace to preserve the trees, and they quickly fell behind the rest of the wagon train. The trees fared well for the first leg of the journey, but as they ascended South Pass in late July, overnight temperatures dropped precipitously. Nightly frosts and light snow were common place in the mountains, and Luelling lost hundreds of saplings. Fruit trees typically withstand freezing temperatures, but only during the fall and winter when the trees are dormant. They were not dormant in July. The exact measures Luelling took to protect his trees are not known. Luelling and his family painstakingly transported their nursery across mountain passes, river crossings, and arid lava beds, protecting the trees from animals and inclement weather. By August some of the saplings were over five feet tall, and in September, the party crossed the Blue Mountains of Oregon, where it met Marcus Whitman, who had been scouting a new route from the Umatilla River to The Dalles. Whitman realized the value of Luelling's trees and tried to persuade him to plant his stock at Waiilatpu, but he declined Whitman's

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[46] William Barlow, "Reminiscences of Seventy Years," *Oregon Historical Quarterly* 13 (September 1921): 276-277.

offer.[47] Whitman returned to Waiilatpu after leading the party to The Dalles, and within weeks, he would be dead.

Shortly after his arrival in Oregon Territory, Luelling and his partner, William Meek, established an orchard at Milwaukie, Oregon, with the surviving trees. Between 1848 and 1851, however, they sold precious few trees because they lacked sufficient rootstock to graft new scions. The cherry trees Luelling transported took readily to wild rootstock, but he had little success with grafting apples to the rootstock of wild Oregon crabapples (*Malus fusca*). Meanwhile Luelling managed to purchase seeds from other emigrants, most notably from a settler named Pugh who sold Luelling a large quantity of seeds. In 1850, Luelling's brother Seth arrived with more seeds, and by 1851 enough seeds had sprouted that his partners were able to make 18,000 grafts. In the fall of 1851, the trees averaged four feet tall, and they sold for one dollar each. In 1853, the brothers started another nursery in Salem, where they set out 100,000 seedlings and employed fourteen men as grafters.[48] By 1856 Luelling had nurseries in four Oregon locations - Polk County, Milwaukie, Salem, and Albany – plus two nurseries in northern California and one in Steilacoom, Washington Territory.[49] Some of the common varieties grown include Red Astrachan, Red June, Talman's Sweet, Summer Sweet, Gravenstein, White Winter Pearmain, Blue Pearmain, Genet, Gloria Mundi, Baldwin, Rambo, Winesap,

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[47] Diamond, "Migrations: Henderson Luelling and the Cultivated Apple, 1822-1854," 217-220, 226, 235-236.

[48] Seth Lewelling, "Pioneers of Fruits: Early Horticulture in Oregon," *Oregonian*, October 16, 1892.

[49] Diamond, "Migrations: Henderson Luelling and the Cultivated Apple, 1822-1854," 284.

Jennetting, Seek-no-further, Tulpahockin, American Pippin, Red Cheek Pippin, and Spitzenberg among others.[50] These varieties represent the scions that survived the journey west.

The Luellings sold not only trees, but fruit as well. Their first apple crop sold in Portland for $1 per pound. As Henderson Luelling's orchards expanded and became more profitable, he opened new operations in California. Fruits and vegetables were in high demand in the mining fields, and they sold for exorbitant rates to miners hoping to avoid contracting scurvy. While people did not know the specific causes of nutrient deficient diseases such as scurvy, there was, at the time, a known correlation between eating fruits and vegetables and preventing such diseases. One young miner, Charles D. Ferguson, recounted his experience when he saw fruit for sale in the mine fields:

> One day, while walking through the market of Marysville, I saw some pears for sale. I had seen no fruit yet in the country. All my boyish appetite was aroused. I took one and ate it and was about to take another, when it occurred to me to ask how much they were apiece. It somewhat jogged the intellect when in a modest and innocent way I was told that they were only $2.50 apiece. I suddenly discovered that the one I had already eaten was sufficient for me at that time.[51]

The demand for fresh produce in the mine fields created a "food rush" that accompanied the gold rush. During 1849, over 1,100 ships docked in San Francisco harbor bearing

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[50] In addition to the fruit stock he transported across the Oregon Trail, around 1850 Luelling also bought a large variety of trees from eastern nurseries and transported them by ship via the Isthmus of Panama. Cardwell, "The First Fruits of the Land, Part I," 35-36.

[51] Quoted in Joseph Robert Conlin, *"Bacon, Beans, and Galantines": Food and Foodways on the Western Mining Frontier* (Las Vegas: University of Nevada Press, 1986), 90.

food and other supplies intended for the mines.[52] While California had some established orchards, these were not enough to keep up with the influx of new immigrants, so Oregon growers took advantage of the situation and sent their agricultural surpluses south. Luelling sent his first shipment of apples from Portland to California in 1853; the apples were shipped in boxes bound in iron straps to prevent theft. The following year he shipped 500 bushels of apples for a profit of $1.50-$2 per pound, and in 1856 he exported 20,000 boxes of apples. From the mid-1850s until 1869, Luelling sent bi-monthly shipments from Oregon to San Francisco, and his two California nurseries, which grew some of the first non-citrus grafted fruit trees in the state, supplied fruit to a burgeoning population of miners and other California emigrants.[53]

Although Luelling was the first to introduce grafted fruit trees to Oregon and California, emigrants began arriving with their own nursery stock and provided competition. Grafted fruit trees were in such high demand throughout the region that nurserymen made sizable profits from the sale of trees and fruit, and in 1850, George Settlemier emigrated from California and established a nursery that eventually surpassed Luelling's in both size and variety of trees.[54] Other commercial nurseries were established around Portland and to the north in the Puget Sound region. In fact, the earliest nursery on the Puget Sound was founded by David J. Chambers, who established his nursery with trees purchased from Luelling and Meek. "People in those days in this sparsely settled

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[52] Ibid., 96.

[53] Cardwell, "The First Fruits of the Land, Part I," 37.

[54] Ibid., 40.

country knew what their neighbors were doing," J.R. Cardwell explains in his history of the Oregon Fruit Industry. "[T]hey came hundreds of miles from all over the country for scions and young trees to set in the little dooryard or to start an orchard," he continued, "so that the trees were soon distributed all over the settlements of the valley."[55] While Luelling's trees were sold throughout Oregon and Washington Territories, it is impossible to know how widely the trees were distributed. But "at least until 1855," says historian David Diamond, "Luelling's nurseries, or others built upon its stock, were the principal sources of fruit trees flooding into Washington, providing the foundation for that state's earliest plantings."[56]

Prior to the Civil War, apples shipped to California sold for more money than any other Oregon Territory commodity. Apple exports to California were robust until over production and the establishment of California orchards drove down prices. The food rush that initially brought great profits to suppliers led to an over-saturated market. Apples that sold for $1 a pound in San Francisco in1853 brought just twenty-five cents a pound in 1856.[57] Although prices dropped, Oregon Territory apples continued to be shipped to California well into the 1860s, especially late varieties such as Yellow Newtown Pippins and Winesaps that typically ripened after the California market had ended for the year. Without the lucrative California mining markets, however, Oregon

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[55] Ibid., 35.

[56] Diamond, "Migrations: Henderson Luelling and the Cultivated Apple, 1822-1854," 282.

[57] Lewelling, "Pioneers of Fruits: early Horticulture in Oregon."

growers had no outlet for their produce, and as J.D. Cardwell has explained, the downturn of California markets produced a "virtual paralysis" in the Willamette Valley:

> The problems of rapid transit, safe packing for long distances, transportation and reasonable freight rates, had not received the attention they deserved from orchardists and railroad men. Things were in a chaotic state. The facilities for canning were entirely inadequate. The fruit could not be handled, and thousands of tons were left to rot, or taken to an unremunerative market, and dumped into San Francisco Bay. There was a flurry among fruit growers; outspoken, indeed clamorous expressions of alarm were heard on all sides. The timid prophesied wreck, ruin, and disaster. Newly planted orchards were given over to neglect; large tracts set aside for tree planting were left to native pasturage, or sown to wheat, oats, clover or grass. A vast, important, and promising industry was in great jeopardy.[58]

Distance and lack of rail transportation made it impossible for fruit growers in Oregon Territory to profit. The development of California orchards, overproduction, and the subsequent price drop "led to carelessness on the part of [Oregon] growers, neglect of the most ordinary precautions, inattention and wastefulness, which resulted not only in spontaneous breeding of insect pests, but also to such conditions of ground and trees that made them favorable to the immeasurably rapid propagation of them."[59] Even in California, fruit production began to lag. Apples were the most popular fruit, particularly Gravenstein, Newtown Pipin, Bellflower, and Spitzenberg, but in 1860, only four counties in California had orchards. By 1870, there were orchards in forty-six counties

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[58] Cardwell, "The First Fruits of the Land, Part I," 40.

[59] Ibid., 38.

with a total of two million trees, but a robust industry failed to develop until the completion of the transcontinental railroad in 1869.[60]

As gold mining dwindled in California, other mining rushes in the west produced corresponding food rushes. The discovery of gold in the Colville district in Washington Territory in 1855 and in the Northern Rockies shortly thereafter created new demand for fruit and other produce. As the news of new gold strikes spread, miners flocked to the region. Mines and small settlements quickly sprang up across such as Pierce, Oro Fino, and Elkhorn in Idaho Territory and Jefferson Basin, Alder Gulch, and Last Chance Gulch in Montana Territory. In eastern and central Washington Territory, mines were worked in the upper Palouse and the Wenatchee areas. Supplies for these mining camps were shipped through Portland and conveyed by steamboat up river to Walla Walla. Historic geographer Donald Meinig likens Portland to San Francisco during the California Gold Rush, but "unlike California," he explains, "mining was dispersed among a dozen important districts spread over a huge area . . . and the Columbia Plain lay between the mines and the sea, and thus became directly bound up in the whole maelstrom of development."[61] Due to its location, Walla Walla became the primary supply center for the mining camps, and stockmen and farmers capitalized by producing and selling foodstuffs locally because doing so was more profitable than shipping goods from Portland.

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[60] Frank Adams, "The Historical Background of California Agriculture," in *California Agriculture*, ed. Claude B. Hutchinson (Berkeley: University of California Press, 1946), 37-38.

[61] Donald W. Meinig, *The Great Columbia Plain: A Historical Geography, 1805-1910* (Seattle: University of Washington Press, 1995), 211.

The mining boom offered the first true market for agricultural products in the Inland Northwest, and as more miners arrived, stockmen drove herds from Oregon to Washington Territory as the grass-covered Palouse hills were ideal for stock raising. The hard winter of 1861-1862 increased the demand for meat, bringing even greater profits to those whose stock survived. Some of the newcomers started growing wheat and establishing orchards to meet local demands. But the mining and cattle booms were transitory. The cattle industry was devastated by a number of cold winters that killed stock, making it more practical for herds to be pastured closer to mining towns, thereby eliminating the practice of shipping beef over long distances.[62]

Wheat farming was more successful, and the range lands were transformed into farms. Walla Walla, with its fertile soil, close proximity to the gold fields, and location along established trade routes, became an agricultural center. The Walla Walla Valley was settled by people from the east, but also by some from the Willamette Valley who were eager to try their fortunes in a new location. As Donald Meinig observed, the discovery of gold in the Northern Rockies "ushered in a large and sustained mining boom which was to be the impetus for a decade of major developments in the Interior."[63] Not only did cattle and wheat production respond to the mining districts, but orchards developed as well. The first nursery in Walla Walla County was established in 1859 by Ransom Clark, and in 1861, Philip Ritz brought fruit trees from Oregon. The following

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[62] Ibid., 221-222.

[63] Donald W. Meinig, "The Walla Walla Country: 1805-1910, a Century of Man and the Land," (PhD diss., University of Washington, 1953), 103, 112.

year, Ritz established his own nursery about half a mile south of Walla Walla, and by 1872 he had an inventory of one million trees.[64]

The gold rush of the 1860s created new wealth, and it persuaded many people to turn to farming. In Florence and Orofino, Idaho Territory, for example, apples sold for as much as $1 apiece, a price which encouraged agricultural development. As Walla Walla historian W.D. Lyman wrote, this "was a great time for the fruit-raisers and nurserymen of the Willamette valley. Many of them laid the foundations of fortunes."[65] This also marked the beginning of truck farming in the Walla Walla Valley which demonstrated even further that the valley was good fruit country. The optimism and promise of the era prompted the Walla Walla *Statesman* to wax poetic about the Walla Walla valley's agricultural prospects. Its January 27, 1865 edition featured this:

> It should encourage the production of seeds adopted
> to the climate of the country.
> It should encourage the cultivation of fruits of
> every description that will grow profitably here[66]

Despite early optimism, farmers in the Walla Walla valley were plagued with the same problems their neighbors to the south had faced a decade earlier: the demise of mining threatened their fruit markets. Without them, farmers had no outlet for their produce. Small local markets could not absorb the loss in sales, and there were no transportation systems to transport fruit long distances. Then came the infamous winter of 1883 whose

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[64] Lyman, *An Illustrated History of Walla Walla County, State of Washington*, 154.

[65] Ibid.

[66] Quoted in Meinig, "The Walla Walla Country: 1805-1910, a Century of Man and the Land," 151.

severe temperatures crippled the industry. Temperatures dropped to minus 29 degrees Fahrenheit, devastating many of the remaining orchards.[67] While it seemed that the apple industry in Washington would be relegated to small truck farms producing for local consumption, two important innovations appeared that revived the lagging industry: the construction of irrigation systems and the arrival of transcontinental rail roads.

Until the mid-1880s, Walla Walla was at the center of commercial activity in Washington Territory. Its location near the Columbia River gave the town steamboat access to Portland to the west, and it was home of the first railroad in the territory. Because of its direct connection with Portland and the coast, Walla Walla had served as a supply center for the mining booms to the north and east. The Walla Walla Valley was an important fruit district in the late 1800s and continues to grow fruit to this day. By the late 1890s, there were 70,000 fruit trees in the Walla Walla Valley, and the combined market value of all fruit and garden produce was $26,000.[68] By the time of statehood in 1889, Walla Walla becoming less important as a supply center because of railroad construction in other parts of the state. Irrigation also diminished Walla Walla's importance as a fruit district. Although some small projects were constructed, little emphasis was given to irrigation. Wheat was well suited to the climate and was easier to grow than fruit. "Successful commercial orcharding was an intensive, painstaking task," explained Donald Meinig. "That fact made it . . . certain that few would have the slightest

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[67] Lyman, *An Illustrated History of Walla Walla County, State of Washington,* 155; Joe J. Locati, *The Horticultural Heritage of the Walla Walla County, 1818-1977* (Walla Walla, WA: Joe J. Locati, 1978), 19.

[68] Donald W. Meinig, "The Walla Walla Country: 1805-1910, a Century of Man and the Land," (University of Washington, 1953), 179.

interest in shifting from grain to another kind of agriculture."[69] Not only did the effort involved in growing fruit discourage farmers, but the development of large-scale irrigation projects in central Washington created strong competition with Walla Walla fruit.[70] Farmers in irrigated districts focused exclusively on the production of fruit, devoting all of their resources to improving their crops and their marketing techniques.

While fruit cultivation was initially widespread throughout the Pacific Northwest, the dry interior of Washington state proved the most commercially viable due to its fertile volcanic soils, warm summer temperatures, and, surprisingly, its lack of moisture, which initially seemed to discourage fungi, scabs, and other tree pests. As the Yakima *Herald* predicted in 1889:

> Fruit culture is an industry that can hardly be overdone anywhere, much less in the great Northwest. When it is remembered that in Eastern Washington, north of Franklin and Yakima counties, fruits cannot be very successfully grown, and that a vast country lies north and east of these counties that must forever be supplied with fruits. The population, too, will ever be on the increase and railroad facilities will be commensurate with the growth and demands of the country. The northern portion of our territory will always be given up to mining, lumbering, stock raising and other than agricultural pursuits. It will therefore be readily seen that there will ever be an enormous demand for fruits, and this the locality heretofore spoken of is an admirable position to supply.[71]

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[69] Meinig, *The Great Columbia Plain*, 392.

[70] Orchards were also planted in the Palouse and in Spokane. The Palouse failed to develop as a fruit district because of stiff competition from irrigated farms elsewhere in the state. Spokane, along with Walla Walla and White Salmon, was one of the state's main fruit growing districts throughout the twentieth century. However, these three fruit districts remained small and never approached the size of Washington's two largest districts: Yakima and Wenatchee-Okanogan.

[71] "Land for Fruit Culture," *Yakima Herald*, February 6, 1889.

Although apple cultivation initially started west of the Cascade range and in Walla Walla, in close proximity to the major population centers in the region, this area never developed commercially.[72] Instead, irrigation and the influence of rail transportation helped turn central Washington from a sage-covered desert into one of the most productive apple growing regions in the nation.

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[72] Many types of fruit, including berries, apples, and pears, grew exceedingly well west of the Cascades. Fruit industry literature from the time held great hope and promise for regions west of the Cascades. In fact, berries and cherries did develop commercially. Apples, however, did not. There are several possible reasons for this lack of development. As one article in *Better Fruit,* the magazine of the Northwest Fruit Growers' Association stated, "Few people appreciate the fact that very little of the soil of Western Oregon and Washington is cultivated. Its people have been so busy clearing forests, cutting lumber, catching and canning fish, besides building railroads and constructing houses that they have not had time to devote to agricultural pursuits." In other words, there were many industries developing in this region that were perhaps more lucrative than horticulture, whereas in central Washington, economic opportunities were more limited. The construction and maintenance of irrigation systems was expensive and necessitated the growth of crops that could return high profits. Irrigation also encouraged high concentrations of orchards to develop in limited areas surrounding irrigation projects. The geographic proximity of orchards to rail lines and to each other facilitated shipping and storage of fruit. Since western Washington had the majority of the state's population, west side orchards continued to provide fruit for local markets into the 1910s and 1920s. "The Fruit Growing Industry in Washington," *Better Fruit* 3 no. 5 (November 1908): 17; "White Salmon – A Developing Fruit District," *Better Fruit* 2 no.7 (January 1908): 14. See also Luce, *Washington State Fruit Industry . . . A Brief History*, 7.

Chapter 2

Orchards for Dummies: Settlement, Boosterism, and Railroad Promotion, 1890-1910

> If she'd come, no amount of money would buy this place. But she won't. She calls it "A Godforsaken Dust Hole."
>
> - Mr. Wentworth, Sunnyside homesteader

> Somehow I had the delightful delusion that all an orchardist had to do was pick apples in the fall and sit around the rest of the year.
>
> -Charles Keiser, Wenatchee homesteader

While orchards had flourished in wet areas such as the Willamette Valley, the sagebrush- and grass-covered hills of central and eastern Washington offered little promise for agricultural development; early travelers referred to the area as "The Great Columbia Desert." Early experiments in irrigation, however, tested the limits of the land, and they demonstrated that fruit cultivation was not limited to areas with adequate rainfall. In fact, the soils and climate of central Washington proved ideal for raising fruit; all one had to do was add water. The construction of irrigation systems and railroads allowed settlement in many previously unfarmed areas, and provided transportation for crops, an influx of capital, advertising, and vision for a new industry in the Pacific Northwest that turned the arid Yakima and Wenatchee Valleys of central Washington into the Apple Capitols of the World. It remained for boosters and railroad men to sell the dream to eager farmers.

Echoing a common American sentiment in the late nineteenth century, James J. Hill, president of the Great Northern Railway, once said that "Land without population is

wilderness, and population without land is a mob."[1] The abundant space of the American West had to become tamed, settled, orderly. Conveniently, this same land also served as a potential solution for the perceived social and economic problems of crowded eastern cities. While many Americans had high minded philosophical reasons for wanting to populate the west, whether it be the ideals of Manifest Destiny, American Nationalism, or social progress, for railroad companies, their interest was largely rooted in capitalistic, profit-seeking motives, despite rhetoric to the contrary. Land without population was land without profit. Railroad companies did more than offer transportation; they were involved in all aspects of western settlement. The arrival of railroads signaled the influx of capital, advertising, and, most importantly, transportation. All major railroads had advertising departments with real estate agents who tried to settle people on the land. As one early promoter wrote, "It is worth more to the railways and the country to get one man to buy a farm and settle in Willamette Valley, than for us to haul fifty people through the west."[2] Railroads had a vested interest in ensuring the success of towns and industry along their lines. Profitable farms that supplied national and international markets equated to an increased need for transportation and more revenue for railroad companies. To various degrees, they all actively invested in corporate ventures along the length of their lines to ensure traffic and a return on investments, including mining, logging, canneries, irrigation systems, and, of course, agriculture.

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[1]James J. Hill, *Highways of Progress* (New York: Doubleday, 1910), 45.

[2] Randall R. Howard, "Following the Colonists: An Account of the Great Semi-Annual Movement of Homeseekers," *Pacific Monthly* 23 (1910): 531.

Land promoters provided settlers to work the newly irrigated land, and the railroads provided transportation for both settlers and their agricultural produce. All three proved necessary for the development of the apple industry. Local boosters and real estate agents worked with rail companies and state and federal government officials to ensure the successful settlement of western lands. Unbridled land speculation followed the construction of new irrigation projects and rail lines, but the relationship between railroads and the regions they serviced was not always greeted with enthusiasm. Conflict between various real estate, railroad, and other local interests often arose before rail lines were even completed. The Northern Pacific and the Great Northern in Yakima and Wenatchee, respectively, both had to deal with local farmers and boosters who frequently disagreed with railroad policy.

Although a transcontinental rail outlet was established in the Northwest by 1883, what were to become two of the most lucrative apple growing regions in Washington Territory remained without rail transportation for several years longer,[3] and in the interim, both the Yakima Valley and Wenatchee continued to rely on steamer connections. In the early 1880s, it took four days by express stage to reach Yakima from San Francisco, provided the stage used existing Northern Pacific (NP) rail lines and Pacific steamer connections. A branchline of the NP ran to Ainsworth, and from there residents of the Yakima Valley used the steam connection. The major drawback was that

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[3] For more on the construction of railroads in the Pacific Northwest, see Peter Lewty's books, *To the Columbia Gateway: The Oregon Railway and the Northern Pacific, 1879 to 1884* (Pullman, WA: Washington State University Press, 1987) and *Across the Columbia Plain: Railroad Expansion in the Interior Northwest, 1885-1893* (Pullman, WA: Washington State University Press, 1995).

ships only departed for California every five days.[4] Wenatchee faced a similar situation. A stagecoach connected Wenatchee and Ellensburg and steamboats came up the Columbia River, but these modes of transportation were undependable and insufficient for large-scale transportation of agricultural produce. As Wenatchee resident and promoter Arthur Gunn lamented to Thomas Burke, a Seattle judge and investor in Wenatchee real estate:

> The old ferry has again moved up river. While the boat is poor and the service is bad, yet it is all there is, and where the boat goes the travel goes. You cannot afford to let the travel from Waterville and vicinity get away from here. If you want trade in your town, you must make a way for it to get there.[5]

It was evident to all concerned that rail transport was necessary if Yakima or Wenatchee were to survive as towns. Without it, agricultural goods could not be shipped out, nor could settlers could easily move in.

While the arrival of the Northern Pacific to Yakima in 1885 and the Great Northern to Wenatchee in 1893 were greeted with excitement and optimism, railroads were also cause for concern. In both instances, the railroad did not build precisely where townspeople had hoped. In Yakima City, town leaders met with Northern Pacific agent Paul Schulze in Portland to discuss plans the abandonment of the original town site, which the NP judged unacceptable due to drainage problems and limited room for expansion. Instead, townspeople were offered lots at a new town site, North Yakima, four

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[4] Click Relander and George M. Martin, *Yakima Washington Jubilee 1885-1960* (Richmond, VA: Franklin Press, 1960), 15.

[5] Arthur Gunn to Thomas Burke, June 13, 1892, Thomas Burke Papers, Manuscripts, Special Collections, University Archives Division, University of Washington.

miles distant. Despite the protestations of local businessmen, the railroad's position remained immovable. The town did not.[6]

Similarly, the Great Northern (GN) also chose to build a mile south of Wenatchee, leaving the four year old town isolated.[7] Further, Wenatchee's situation was complicated. The Wenatchee Development Company (WDC), a company started by Seattle real estate investors but owned in part by James J. Hill of the Great Northern, was speculating on land at the new town site, whereas competing real estate companies had invested in the original town site. Fearful of residents' reactions, the WDC and the GN withheld the exact particulars of the proposed route and Hill's connection to the new town site.[8] When the WDC finally announced the new town location, "a feeling of bitterness engendered that deeply stirred the emotions of the entire community."[9] Established businessmen were reluctant to uproot their new businesses, so the company offered new lots to all the establishments willing to make the move. Ultimately, the company's offer of new lots to any business that would move was accepted.

While the location of a rail line could make or break a town, the stories of Yakima and Wenatchee's rebirth in new locations demonstrates the complicated relationship that would develop between railroads and communities. Railroads became saviors that

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[6] Relander and Martin, *Yakima Jubilee*, 16.

[7] L.M. Hull, *History of Central Washington* (Spokane, WA: Shaw & Borden Company, 1929), 532; Richard F. Steele, *History of North Washington: Illustrated History of Stevens, Ferry, Okanogan, and Chelan Counties* (Spokane, WA: Western History Publishing Co., 1904), 713.

[8] Burke to William Watson, May 16, 1892, Thomas Burke Papers.

[9] Hull, *History of Central Washington*, 534.

provided transportation and an influx of capital in the form of loans or financing for infrastructure that supported local industry. At the same time, the railroad companies' influence over local industry created tension as corporate and community goals diverged. Conflict with railroad companies extended beyond matters of transportation, including complaints about freight rates, speed of service, availability of cars, and construction of depots and sidings. Railroads studied local and regional conditions, and in the case of central Washington recognized the importance of irrigation to the region.

Although railroads promoted agriculture, much of the West was dry with too little rainfall to support large populations or agriculture. Rainfall in much of the West averages less than ten inches per year, yet a minimum of fifteen to twenty inches was needed to grow crops. In areas such as this, irrigation was necessary for agricultural production and for luring settlers. Initially, local developers invested in irrigation companies to improve the value of the dry land they sold, but when these combination real estate-irrigation companies became financially insolvent, the railroads, and later the federal government, stepped in with funds to keep the irrigation projects operational. The railroads built upon the irrigation experiments of the earliest settlers to create larger irrigation systems, thereby increasing their profits by hauling larger quantities of agricultural products that were supported by irrigation.

The initial success of small canals demonstrated the richness of the land, and land speculators, investors, and communities combined to construct larger irrigation systems to bring more land under the plow. Many of corporations were connected with real estate companies because installing irrigation systems was a sure fire way to increase land values. Local settlers invested heavily in the construction of early irrigation systems as

well, both financially and through their physical labor.[10] As irrigation became more successful, local operations drew the attention of investors and land speculators from communities such as Seattle, Tacoma, and Spokane, who in turn obtained funding from eastern investors. What started in the 1870s as a local initiative to irrigate small plots of land was by the 1890s a growing industry involving locally-owned corporations backed by outside investors. Small farmers, unable to maintain the crude irrigation ditches they constructed, turned to larger companies that promised steady supplies of water and offered complex plans for irrigating increased acreage.

Irrigation and real estate speculation was attractive because irrigated land often sold for several times the value of non-irrigated land. Irrigation raised land prices more than any other improvement, and it fueled many get-rich-quick schemes. Land prices could rise from a few dollars per acre for dry sagebrush, to several hundred dollars per acre for irrigated acreage. According to *Better Fruit*, the preeminent horticultural journal in the Pacific Northwest, unimproved irrigated acreage in Wenatchee sold for $300 to $500 per acre, while young orchards fetched up to $700 an acre. Established orchards

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[10] Many of the first irrigation canals in central Washington were constructed during the territorial period from the remnants of mining sluices by miners who chose to stay in the region after the mines played out. In Wenatchee, for example, Philip Miller filed for a deserted mining claim on Squilchuck Creek in 1872. He enlarged a pre-existing mining ditch on the property for agricultural purposes, and he planted alfalfa, wine-grapes, and apples. Miller is also credited with brining the first apple trees to Wenatchee. According to local historian John Gellatly, Miller purchased the trees in Walla Walla and transported them to Wenatchee on the backs of two mules. John Gellatly, *History of Wenatchee: The Apple Capital of the World* (Wenatchee, WA: Wenatchee Bindery and Printing Co., 1958), 330. For more on the development of irrigation in Wenatchee see Amanda Van Lanen, "'It was a time when the promoter promoted': Irrigation Projects in Wenatchee, Washington, 1890-1908" (master's thesis, Washington State University, 2004).

could sell for $1000 an acre. Compared to the price of non-irrigated acreage wheat land, which sold for as little as $10 per acre, orchards were an expensive investment. Boosters argued that the price was more than worth the returns because some successful orchards touted net profits of over $1000 per acre, but more typical returns were $275 per acre.[11] Nonetheless, real estate boosters lured prospective buyers with the promise of easy wealth, when in reality these easy profits went to boosters who sold the land without having to shoulder the long term costs of irrigation.

Many became wealthy from the sale of irrigated land, but the business was fraught with difficulties. Irrigation canals were costly to build and operate, and several companies failed to collect maintenance fees and went bankrupt because of costly repairs. Then there was the matter of geography determining where water could be delivered. Acreage on slope downhill from a river or creek offered ideal conditions. Water could be pumped from rivers to bench lands as well, but it was nearly impossible at that time to pump water uphill effectively. Such was the ill-fated attempt at irrigation in Pasco.[12] Geology played an important role as well. Some canals were of earthen construction, and water frequently seeped out of these channels before reaching its end user. Yakima resident Roscoe Sheller recalled that in 1904, seepage from the Sunnyside Canal was so

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[11] Ed M. Foy, "A Brief Description of Wenatchee Valley" *Better Fruit* 1 no. 1 (July 1906): 16.

[12] Due to geography, the Wahluke Slope and Basin City areas near Pasco were not irrigated until the late 1960s, making them one of the last areas in Washington to be irrigated. In keeping with the long tradition of railroad promotion, Joseph A. Horral, the Northern Pacific Western Agricultural Development agent, called Wahluke Slope "the best land under the stars." "Wahluke Slope 'Eden' Foreseen by NP Officials," *Tri-Cities Herald,* Pasco, Kennewick, Richland, Washington, December 17, 1968.

bad that the town's streets were "quagmires." Wagons sunk axel-deep into the muddy streets, and buildings with basements flooded.[13] This forced companies to devise more elaborate and costly delivery methods. In Wenatchee, for example, engineers constructed a wooden, enclosed pipeline, while in Clarkston, builders blasted portions of canal out of solid rock. Despite these advances, problems continued as natural water flows failed to keep up with demand, especially in the early decades of irrigation when storage reservoirs had not yet been constructed.

Even if finances, geography, and geology were not impediments, success depended on the farmer, who needed to purchase land and irrigation rights from an irrigation company, because having a continual water supply was necessary for keeping land in production. In some instances, water users refused to pay what they regarded as exorbitant usage fees, and crop failures and glutted markets forced banks to foreclose on some farmers' properties. Early orchardists were particularly susceptible to foreclosure because it took five to eight years for orchards to mature and bear fruit. As historian Donald Worster writes, Americans were not prepared for the difficult consequences of irrigation, namely that far fewer people benefited from irrigation systems than expected. Systems "had to be organized into tight hierarchical and corporate entities which violated traditional rural culture," and finally, administrators had to "become adept at social as well as environmental engineering."[14] Despite boosters' best sales pitches, irrigation

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[13] Roscoe Sheller, *Courage and Water: A Story of Yakima Valley's Sunnyside* (Portland, OR: Binfords & Mort, 1952), 121.

[14] Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Oxford University Press, 1985), 170.

remained problematic, for it presented unexpected obstacles to the novice farmers who had purchased irrigated farmsteads.

These problems not withstanding, irrigation companies sprang up in Kennewick, Clarkston, Yakima, Sunnyside, Burbank, and Wenatchee. These companies which were founded by local entrepreneurs were often financed by the railroads or eastern investors. Initially, local businessmen established companies and obtained funds through local water subscriptions and land sales, but these dollars were frequently insufficient for constructing and maintaining an irrigation system. Meanwhile, railroads were interested in the success of irrigation because of the impact of selling irrigated portions of their land grants and hauling agricultural commodities. This persuaded railroads to support struggling systems, if only indirectly. James J. Hill, president of the Great Northern Railway and promoter of irrigation and scientific farming methods, stated:

> Where irrigation prevails, there is certainty, abundance and variety of products. Water being procurable at will, unfavorable seasons do not exist and the growth of plant life is at the command of the cultivator. . . . As soon as water is put on this formerly worthless land it rises in value to a figure several times what the best non-irrigated land would bring; prices justified by the profits from special crops of early fruits, melons, berries or vegetables to supply high-priced markets.[15]

During the 1890s, the railroads did not directly sponsor or operate irrigation companies because they saw irrigation as experimental and costly. They did, however, provide financial backing for certain local companies, and later they purchased some companies,

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[15] Hill, *Highways of Progress*, 201. Hill mentions a wide variety of fruit and vegetable crops that could be grown under irrigation. Some growers experimented with growing vegetables or other fruits to help tide them over until their apple orchards started producing. From the beginning of settlement, the Yakima Valley grew a wide range of tree fruits, vegetables, and hops. The Wenatchee-Okanogan Valley, on the other hand, specialized in apples, although pears were commonly grown with apples. These patterns still hold true today.

making them subsidiaries of the railroads.[16] The development of the Yakima and Wenatchee Valleys illustrates the symbiotic relationship among real estate investors, irrigators, and railroads.[17]

Initial irrigation efforts in central Washington were local with early settlers enlarging small ditches to accommodate growing agricultural needs. In 1885, when J.D. McIntyre started surveying land for the Sunnyside Canal in the Yakima Valley, it was a community project comprised of local stock holders. McIntyre proposed ninety-eight miles of new canals which would draw water from the Yakima River. Costs for enlarging the canal system were estimated at $500,000 with an additional $100,000 for constructing reservoirs that would double the canal's capacity.[18] The canal was formally opened in March, 1892, and a local newspaper boasted that the canal would transform half a million acres of worthless land into prime real estate worth twenty-five million dollars. Although this would take several years, the editor remained highly optimistic, proudly proclaiming

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[16] The Northern Pacific completed its transcontinental line in 1883 and the Great Northern completed its transcontinental line in 1893.

[17] See John Fahey's article for a discussion of the convergence of real estate and irrigation in Spokane. Plans to irrigate orchard developments there were started in 1896 by W.L. Benham, who was connected to both railroad and banking through his work as a salesman for the Northwestern and Pacific Hypotheekbank, a Dutch mortgage lender in Spokane, and his work as a traffic agent for the Great Northern. Benham secured water rights from six local lakes and organized two companies: the Spokane Valley Irrigation Company and the Spokane Valley Land and Water Company. John Fahey, "Irrigation, Apples, and the Spokane Country," *Pacific Northwest Quarterly* 84 (1993): 7-18.

[18] Rose M. Boenig, "History of Irrigation in Washington State," *Pacific Northwest Quarterly* 9 (1918): 269.

that "Verily when these works are carried out we can claim the greatest irrigation system in America."[19]

The year 1892 saw an important shift in Yakima irrigation. Walter N. Granger, irrigator and local booster, and Thomas F. Oakes, president of the Northern Pacific, formed the Northern Pacific, Yakima and Kittitas Irrigation Company. For the first time, well-funded investors backed construction of irrigation systems in the Yakima Valley. As a part of negotiations, Granger received the option to buy up to 90,000 acres of land from the Northern Pacific for a reduced rate of $1.25 an acre, contingent on building an irrigation system. Granger planned 550 miles of lateral and branches that would irrigate a total of 40,000 acres, and he oversaw the platting of two townsites, Sunnyside and Zillah, the latter named after Oakes' daughter. Advertised at the 1893 Chicago World's Fair, prospective buyers were offered land at $45 to $65 per acre.[20]

Undeterred by the Panic of 1893, construction continued. In 1900, the Northern Pacific moved to consolidate the irrigation systems in the Yakima area, forming the Washington Irrigation Company and retaining Granger as company manager. The irrigation venture "seemed so promising," explained historian Rose Boening, "the Northern Pacific made advances to the irrigation company for consolidation, with the

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[19] "Sunnyside Canal Formally Opened Saturday Last in Presence of 500 People," *Yakima Republic*, April 1, 1892.

[20] John Fahey, *The Inland Empire: Unfolding Years, 1879-1929* (Seattle: University of Washington Press, 1986), 87-88.

result that the Northern Pacific took two-thirds of the stock."[21] The Northern Pacific strove to keep tight control over its landholdings, hoping to prevent rampant speculation and competition for water. The Washington Irrigation Company limited its sale of lands to those who agreed to buy water rights for $30-$60 per acre. By 1905 the company operated over 700 miles of canals and laterals that watered 36,000 acres, making it the fourth largest irrigation project in the U.S. at the time. But the company struggled to retain its original uses. "As a general rule," explains historian John Fahey, "nearly three-fourths of the original buyers of irrigated tracks sold their land within three years, partly because they tired of competing strenuously for water."[22] While water availability discouraged some, other factors also contributed to this turn over, such as the unexpected costs associated with irrigation, crop failure, and a general lack of knowledge regarding irrigated agriculture. Illustrating the unexpected irrigation problems that often arose, Roscoe Sheller, an early Yakima Valley resident, recalled that the canal near his family's farm often broke, inundating their fields with water and fish. "Thousands of fish," wrote Sheller, "could be picked up in the shallow water that remained. Those not retrieved soon . . . created a stench almost unbearable to those living nearby."[23]

The Northern Pacific found it necessary to compete with other areas of the state. For example, in Clarkston, Washington, a Boston syndicate, which included Charles Francis Adams Jr., had formed the Lewiston Water and Power Company in 1895.

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[21] Rose M. Boening, "History of Irrigation in the State of Washington," *Pacific Northwest Quarterly* 10 (1919): 21-22.

[22] Fahey, *The Inland Empire*, 89.

[23] Sheller, *Courage and Water*, 30.

Although a successful irrigation system had been constructed there, attempts to sell plots at its development, dubbed Vineland, ultimately failed because it was a small operation without railroad backing. The Northern Pacific, moreover, sold irrigated land in Yakima for half the price those at Vineland. Orchard start up costs were more expensive in Clarkston compared to Yakima because of the railroad subsidies. Furthermore, the Northern Pacific was selling Palouse land, just to the north, for $10 an acre, and wheat farming required less initial investment and produced a crop the first year. The company was reorganized twice, one in 1904 and again in 1910; but ultimately it could not compete with the resources of the Northern Pacific.[24]

Like Yakima, Wenatchee experienced an explosion of land speculation involving railroad development and outside investment. With railroad and transportation matters settled after the arrival of the Great Northern Railway in 1893, farmers and investors were able to turn their attention to agricultural production. Although the climate and soil of the Wenatchee Valley lent themselves to apple cultivation, irrigators desperately needed more capital to construct complex irrigation and water systems that were capable of watering the entire valley. Insufficient water was a cause for great concern for many, including Thomas Burke, an early real estate investor who, in 1892, dispatched a hydraulic engineer to Wenatchee to investigate the possibility of constructing both a municipal water works and an irrigation system for the valley. Surveys were conducted, but the project languished in the planning stage. Finding capital

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[24] David Irwin Gedrose, "Garden in the Desert: A History of Development in Clarkston, Washington, 1896-1911" (master's thesis, Washington State University, 1990), 37-40.

remained a challenge for irrigators because large-scale irrigation ditches capable of irrigating more than a few small homesteads were expensive to build and maintain. Cooperative efforts among valley residents were unsuccessful because they lacked funding. Matters worsened with the Panic of 1893 which made banks and investors even less willing and able to lend money. The Columbia Valley Bank in Wenatchee, for example, experienced a $30,000 run, or 45 percent of its deposits, in one day.[25]

Seeing the desperate need for water as a business opportunity, Wenatchee Development Company agent Arthur Gunn threw himself into the fray. Gunn came to Wenatchee in 1892 as a partner in the Columbia Valley Bank and became a passionate promoter of the town. After the bank closed in 1893, he began selling land for the WDC and formulating his own plans for an irrigation system and a municipal water supply. His connections with Burke and the Development Company positioned him to promote water and real estate in the valley. Although Burke wanted water in the valley, he was in no position to finance a corporation himself, but Burke's connections with Hill and the Great Northern Railway provided Gunn with the necessary capital. Ultimately Burke and Gunn formed a mutually advantageous relationship: Burke used Gunn to sell land and promote irrigation, and Gunn used Burke to gain access to Hill. Interest was growing in the agricultural opportunities in the Wenatchee Valley, and Hill was also eager to settle the land and promote agricultural development. "I know that in the first instance my great

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[25] Gunn to Burke, June 12, 1893, Thomas Burke Papers.

interest in the agricultural growth of the Northwest was purely selfish," Hill explained, "If the farmer was not prosperous, we were poor."[26]

In March 1896, Gunn teamed with Jacob Shotwell to form the Wenatchee Water Power Company.[27] With Shotwell's engineering talent and Gunn's skill as a booster, the company made rapid construction and financial gains. In May 1896, Gunn met with Hill to discuss the Water Power Company and succeeded in securing a $15,000 bond. Gunn observed that "Hill evinces a decided desire, I believe, to aid the Wenatchee Valley,"[28] but wary of townspeople's reactions, Hill wished to conceal the Great Northern's involvement.[29] When news of Hill's investment in the Water Power Company leaked out, it was met with mixed reviews. Most people were excited at the prospect of a new ditch,

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[26] James J. Hill quoted in Claire Strom, *Profiting from the Plains: The Great Northern Railway and Corporate Development of the American West* (Seattle: University of Washington Press, 2003), 8.

[27] Jacob Shotwell and his brother Harvey were both civil engineers, and they had constructed several ditches in the Wenatchee Valley, including the Jones-Shotwell Ditch completed in 1891, a ditch which irrigated 160 acres. Gellatly, *History of Wenatchee*, 44. There is a discrepancy in Gellatly's dates. Gellatly states that the ditch which became the Gunn Ditch was began in the early 1900s. Later he states that Gunn purchased the ditch in 1896. Hull states that construction on the ditch began in 1891. Harry I. Shotwell, *The Shotwell Story* (N. p., 1953), 25.

[28] Gunn to Burke, June 15, 1896, Thomas Burke Papers.

[29] Gunn to Burke, September 7, 1898, Thomas Burke Papers. Claire Strom argues that Hill often preferred to conceal the Great Northern's involvement in projects, particularly those of an agricultural nature. Hill was a strong proponent of new scientific agricultural methods; however, some of his earliest attempts to introduce these methods to farmers failed. In an era when many farmers were suspicious of the latest scientific practices developed by academics on research farms, farmers resisted Hill's overbearing, top-down, and sometime impractical approaches to farming. After these initial failures, Hill believed it was best to distance himself and the Great Northern from these programs. Additionally, companies such as the Great Northern routinely used subsidiary corporations for financial purposes. Strom, *Profiting from the Plains*, 27, 53.

but some opposed it, Gunn noted, "because it will not line their own pockets."[30] Construction proceeded rapidly, despite nagging funding shortages, and Gunn's Ditch began delivering irrigation water 1898. However, financial troubles persisted. Although an effort was made to persuade the WDC to purchase the company, the Great Northern purchased, albeit reluctantly, the $15,000 bond outright.[31]

Wenatchee historian John Gellatly has described Gunn's Ditch was "one of the most dependable in the valley."[32] Nonetheless, the Great Northern officially liquidated the Wenatchee Water Power Company in 1911, although the system remained in use. Ultimately, the company lost over $12, 000, but in a letter to Hill, Farrington found something to salvage:

> Considering the fact that Gunn's ditch was the pioneer of the irrigation projects in Wenatchee and its results from an irrigation (not a financial) standpoint probably made the other projects possible, resulting in a large traffic for our company, the loss. . . is a comparatively small amount for the company to pay for the results obtained.[33]

The success of Gunn's Ditch encouraged other irrigators to construct even larger projects, and in 1902, W.T. Clark, an engineer who had just completed work on irrigation canals in Yakima and who would later become an orchardist himself, was brought in to construct a larger canal known as the Highline. Backed by Portland investors, the plan moved forward smoothly. When construction was completed in 1903, the system irrigated 6,000

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[30] Gunn to Burke, June 16, 1896, Thomas Burke Papers.

[31] Farrington to Burke, June 23, 1898, Thomas Burke Papers.

[32] Gellatly, *History of Wenatchee*, 45.

[33] Farrington to Hill, May 26, 1911, Great Northern Comptroller's Files, Minnesota Historical Society.

acres, which was five times that of Gunn's Ditch. In 1908 the project expanded to include a pipeline across the Columbia River that irrigated East Wenatchee.

Orchard production started in earnest, and by 1907 the Great Northern shipped 616 boxcars of apples from Wenatchee, the first sizable apple crop shipped from the community.[34] Historian W. D. Lyman observed that agricultural development of the late nineteenth century "was a time when the boomer boomed, the promoter promoted, and the sucker sucked."[35] This was certainly the case for irrigators in Wenatchee during the 1890s and into the 1900s because optimism, faith in technology and the land's potential had persuaded farmers and promoters to construct elaborate irrigation projects that seemed impossible years earlier.

Yakima, Wenatchee, and other irrigation projects around the state developed similarly. All irrigation projects built upon the efforts of early settlers and relied upon outside funding. Each corporation faced financial difficulties and underwent a series of reorganizations. All dealt with water shortages and engineering difficulties, and all eventually became publicly-owned entities, although the success rate of each area varied.[36] Yakima and Wenatchee ultimately became large apple producers and brought

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[34] Gellatly, *History of Wenatchee*, 51-53, 127-128.

[35] William Denison Lyman, *The Columbia River: Its History, Its Myths, Its Scenery, Its Commerce* (New York: G.P. Putnam's Sons, 1911), 258-259.

[36] By the 1910s, many of the private irrigation companies started in the 1880s and 1890s had become public irrigation districts. High maintenance costs forced several private companies into bankruptcy and left farmers to take matters into their own hands. Although the federal government became involved with irrigation with the passage of the Newlands Reclamation Act in 1902, federally funded irrigation projects were not a significant factor in the early development of the apple industry. The Reclamation

enormous profits to the Great Northern and the Northern Pacific. Other irrigated areas in the state were less successful. Kennewick, for example, failed to develop into an important agricultural area until federal irrigation projects were constructed during the 1930s and 1940s. Clarkston languished due to insufficient railroad interest and competing opportunities, such as wheat farming, which required a smaller initial investment. At the outset, irrigation companies, land promoters, and the railroads needed each other because no individual venture was capable of doing what needed to be done on its own. Everyone wanted to sell land, but without irrigation, it was nearly worthless.

Railroads found boosters were indispensable for their work in promoting townsites and irrigation projects, as the development of Yakima and Wenatchee demonstrate. Both areas had small populations prior to the arrival of the railroads, but the arrival of the Northern Pacific to Yakima in 1885 and the Great Northern to Wenatchee in 1893, coupled with the simultaneous construction of irrigation projects, attracted agriculturalists in search of new economic opportunities. New modes of transportation and flourishing irrigation projects generated great optimism among Washington's

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Service was initially reluctant to take on projects in Washington because the state, as Reclamation Service director Frederick H. Newell argued, was "well covered with irrigation systems." A survey conducted by the Northern Pacific in 1922 found that 29 percent of irrigated land along its lines was watered by private companies, 24 percent by irrigation districts, and 47 percent by government projects. The bulk of government irrigated acreage was concentrated in two projects: 71,104 acres on the Indian Reservation at Wapato and 85,290 acres on the Sunnyside project in Yakima. The Sunnyside project was started as a private venture, and it was purchased and enlarged by the federal government in 1905. Although the government investigated potential new irrigation sites in the Wenatchee-Okanogan region, it deemed these sites to be either useless of limited potential. Fahey, *Inland Empire*, 91-94; "List of Irrigation Projects Along the Line of Northern Pacific Railway in State of Washington, and Acreage in Cultivation, October, 1922," Northern Pacific President Subject Files, Box 137.B.16.7B, Minnesota Historical Society.

boosters, even before rails were laid or irrigation canals dug. The mere suggestion of construction was often enough to set off rampant land speculation. Each community claimed the best of everything in an effort to attract people and capital – the most productive land, the biggest fruit, the friendliest citizens, and the closest ties to railroads.

While most of the irrigated land was initially planted in alfalfa to supplement livestock feed, local boosters had a grander vision for central Washington than simply extending the capacity of cattlemen. They dreamt of wealth, lands populated with small farms and families, children running through orchards, towns with modern facilities, and Christian values.[37] In the dry-sage brush, they envisioned a green Eden that could fulfill everyone's social, spiritual, and economic needs. The myth of the garden was a popular theme in late nineteenth and early twentieth century America, a continuation of Manifest Destiny that propelled Americans across a continent. The Biblical injunction to subdue the land and to be fruitful was embraced by boosters and farmers alike, and they used a complex and frequently contradictory variety of images to describe their landscape, often mixing, as Mark Fiege explains, "organic and mechanical, female and male, secular and divine metaphors."[38] Irrigation came to represent one more metaphor: the ultimate triumph of man over nature, one that included not only the ordered construction of the

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[37] These themes hold true for areas other than Washington. In a survey of twelve Northern Pacific advertisements published between 1897 and 1902 for lands in Minnesota and the Dakotas, Sig Mickelson found that land prices and value were the most touted features, with those elements being present in eight advertisements. This was followed by proximity to markets, rail lines, schools, and proximity to churches. Sig Mickelson, *The Northern Pacific Railroad and the Settling of the West,* (Sioux Falls, SD: Center for Western Studies, 1993), 97-98.

[38] Mark Fiege, *Irrigated Eden: The Making of an Agricultural Landscape in the American West* (Seattle: University of Washington Press, 1999), 172.

natural landscape, but the creation of new, wholesome communities populated by strong, healthy, and moral individuals – all the while transforming the desert into a garden.

The future of newly irrigated townships was outlined in promotional literature that was produced by both railroads and by local commercial clubs. They appealed for a certain type of settler to engage in specific economic activities that would exploit the natural resources of each location. This could include a discussion of orchards, forests, livestock, or, in the case of many brochures, all three. In some instances, town boosters adamantly encouraged specific types of development, particularly orchards. After the completion of the Highline Canal in Wenatchee in 1904, much of the irrigated land was put into apple orchards. Against the backdrop of recent business success, one investor, Melville Stone, approached W.T. Clark, Thomas Burke, and Arthur Gunn about diversifying with new business opportunities with the establishment of a sugar beet farm and factory. All three men had financial investments in either the canal or its surrounding real estate, so they had a stake in the proposal. Gunn supported the proposition because sugar beets would generate an immediate return for the Highline, but Clark opposed it, claiming, as Gunn complained, "that the land would be more valuable for the raising of fruit."[39]

Regardless of the economic specifics of the promotional tracts, railroad and commercial clubs' brochures featured glossy black-and-white photographs of multi-story Victorian houses, schools, churches, and main streets lined with brick buildings and electric streetcars. The photos served as an invitation for prospective settlers, and they

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[39] Gunn to Burke, February 1, 1904; Burke to Melville Stone, February 3, 1904; Gunn to Burke, February 3, 1904, Thomas Burke Papers.

attested to the prosperity of each town. A 1912 North Yakima brochure contained vital statistic of the community, including its population (14,082 in 1910), postal receipts, and bank deposits. It lauded the accomplishments of the town and the spirit of her citizens:

> In all other respects has North Yakima evinced her prosperity. The city possesses all of the utilities and opportunities of a modern municipality. The streets are broad and well paved, there being six miles of hard surface pavements – asphalt, brick and bitulithic. The business blocks are of brick, concrete and stone, and the residences of the city represent a high degree of architectural beauty and home comfort. . . . The abiding impression made by the city is one of magnetic energy, vitality, optimism and abundant well-being. The citizens of North Yakima have a very justifiable pride in their city and a confidence in the future that finds its warrant in the truly remarkable growth it has made and the prosperity it now enjoys.[40]

The detail used by the North Yakima Commercial Club to describe its city illustrated the townspeople's pride in having established such a town on dry sage land within a few short years. It also showed the descriptive lengths to which boosters would go to lure potential buyers to their town. Every town, regardless of amenities, size, location, or actual prosperity, made claims of greatness. Maps in brochures showed the prospective town as the center of the universe, connected to the outside world by rail lines. These maps reflected the hopes and dreams of Northwest boosters as they attempted to sell their vision to the outside world.[41]

While profits from land sales were certainly foremost in the minds of boosters, members of these new communities had a great deal of pride in their towns, their

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[40] *Yakima Valley Washington,* (North Yakima, WA: Yakima Commercial Club, 1912), 56-57, 60.

[41] See Katherine Morrisey, *Mental Territories: Mapping the Inland Empire* (Ithaca, NY: Cornell University Press, 1997) for a more detailed discussion of how local mapmakers manipulated maps reflect their values and to promote settlement to the region.

orchards, and the foundation of community institutions such as churches, all of which symbolized the transplanting of American civilization to a new environment. Real estate companies realized that merely offering land was not enough to entice prospective buyers — an entire lifestyle had to be promoted. The articles of incorporation from the Wenatchee Investment Company illustrated the lengths to which real estate companies would go to in order to facilitate the selling of lots and increase property values. Article Two stated that the company's developmental purposes: 1) laying out the townsite and constructing streets; 2) building and managing plank roads, bridges, wharfs and building or purchasing hotels; 3) purchasing, selling, and leasing real estate; 4) constructing and maintaining a street railway; 5) constructing, purchasing, or leasing sawmills, dams, and irrigation ditches; and 6) building bridges and ferries.[42] More than a simple real estate company, the corporation engaged in the business of town-building. Although this particular company failed to accomplish its lofty tasks, it illustrates the lengths to which companies might go in their quest to attract settlement.

While prospective settlers were most certainly interested in a town's amenities, the more important draw was its economic prosperity. To this end, most promotional brochures focused on agriculture and irrigation. From the beginning, irrigated land boosters emphasized specialty crops such as fruits and vegetables, believing that irrigation water was too precious to be wasted on grain crops. Irrigated grain crops could not be grown as cheaply as grain on dry-land farms. As one newspaper reporter so confidently wrote in the *Yakima Herald*:

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[42] Wenatchee Investment Company, Articles of Incorporation, July 1, 1891, Thomas Burke Papers.

> This land is too valuable to be given up to grain, which should be left to the Big Bend, Walla Walla, and Klickitat regions. The railroads take the garden stuff raised in the Yakima Valley to the coast cities in a day, and there is never a time, from the middle of June to the end of October when the market is slow. In fact, the Sound cities are coming each succeeding year to rely more and more upon the Yakima valley for those fruits and vegetables which formerly came from California.[43]

As early as the 1880s, boosters lauded the fertility of the land, its ability to produce the finest fruits and vegetables with little effort, and its proximity and demand of Washington's growing urban markets. Although the writer overstated the ease with which produce was transported and sold, his rhetoric exemplified the type of articles printed in local newspapers, agricultural trade publications, railroad literature, and locally produced town promotional literature.

The irrigated lands of Washington were a lush paradise, complete with Biblical allusions, and the people of the valley possessed superior intelligence demonstrated by their wise use of resources and mastery over nature. Such claims went beyond the simple market boosterism. Another writer in the *Yakima Herald* wrote:

> Today, therefore, where four year ago were uncultivated prairies, the home of great herds of unrestrained wild cattle and vicious bands of cayuse ponies who knew no halter, now stands the beautiful city of North Yakima, the queen of eastern Washington, and on every side acre after acre of broad cultivated domains, rich in fruit, hops, grain, and vegetables of every description; all brought about in the short space of time by the intelligent use of the vivifying waters of the rivers.[44]

These articles and others like it described a lush, garden wonderland, instantly transformed by the power of irrigation, but the truth of the matter was that successful

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[43] "Rich in Lands," *Yakima Herald,* February 2, 1889.

[44] "Irrigation Enterprise," *Yakima Herald*, February 2, 1889.

irrigation took a great deal of time and effort. More often than not, early settlers did not find a garden paradise awaiting them when they first arrived. Despite the brimming optimism of local boosters, many found it difficult to carve a living out of the sage-covered desert. No figures exist on how many people fell into bankruptcy or sold out, but anecdotal evidence suggests that many people met such a fate. Roscoe Sheller and his family moved to a homestead near Sunnyside in 1899 when Sheller was ten. Lured by boosters from the Christian Cooperative Colony, an organization that purchased defunct homesteads in the Yakima Valley with the hope of creating a new Christian community, Sheller's father had sold his hardware store in Illinois. The family purchased an eighty acre homestead from a "discouraged homesteader" named Wentworth who had planted twenty acres of fruit trees. Wentworth's reason for selling and leaving was simple: his wife refused to live on the homestead with him. "I stayed hoping she'd see the future here as I do," Wentworth lamented. "If she'd come, no amount of money would buy this place. But she won't She calls it 'A Godforsaken Dust Hole.'"[45]

Like many others, Wentworth did not survive the several years time lag between planting and first harvest. Nonetheless, Wentworth and Sheller's father had an optimistic vision of what the land could look like in time, even if their wives did share it. Sheller described his mother's horror at her new surroundings. Before the move, Mrs. Sheller had referred to the promised Western home as "Rainbow's End," a term she abandoned after disembarking from the train in central Washington. It was difficult for her to remain enthusiastic when confronted with the reality of their new homestead. The promised

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[45] Roscoe Sheller, *Blowsand* (Portland, OR: Metropolitan Press, 1963), 2, 7.

house was nothing more than a small dilapidated shack, a fraction the size of their previous home, and it was filled with dust and grime and infested with bed bugs. A few peach trees had been planted, but they were small and resembled "little more than whips with bushy tops." The property was covered in sand, sage, and bunch grass, and the irrigation canal needed substantial repairs. Nor did Sunnyside live up to the Shellers' expectations. During their first few days there, Mrs. Sheller was horrified at the news that a dance was to be held at their boarding house. Drinking, dancing, and card-playing went against the Shellers' religious beliefs, and based on the Christian Cooperative Colony's sales pitch, they assumed that the townspeople shared their values.[46]

Meanwhile, boosters were not interested in just any settlers, for they aimed their advertising efforts at specific audiences. For example, much of the early orchard literature was directed at novice farmers – teachers, lawyers, doctors, and other professionals who had little farming experience. The idea they conveyed was that horticulture and irrigation were so easy that anyone could make a fortune with minimal effort. One brochure advertising Chelan County boasted that lands easily netted $1000 per acre, and that five acres was enough to "give its owner enough surplus money to allow him to spend the greater part of the year in ease and comfort."[47] Local boosters saw themselves as more than real estate agents; they were community builders, and the people they wanted to attract needed to be upstanding citizens who could make positive

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[46] Ibid., 4-7, 49.

[47] Wenatchee Commercial Club, "Chelan County, Washington: Home of the Big Red Apple" (Wenatchee, WA: n.p., 1908). Special Collections, University of Washington.

contributions to growing communities. Town booster Walter Granger opined that newcomers had to "all be prosperous farmers where they came from, and have brought with them ample means for the immediate improvement of the land."[48] Historian W. Thomas White offered an assessment of Granger, writing that he "had no intentions of his valley's serving as a haven for the discontented or the dispossessed. Rather," White continued, "he looked forward to the creation of a moral, affluent society composed of already successful farmers who could assure the future of the Yakima Valley."[49] According to some, Granger and others like him succeeded in creating a wholesome state. An agriculturalist who visited eastern Washington in 1908 observed:

> The fact is, to Washington was transplanted all the sterling cardinal virtues – energy, industry, thrift, courage, respect for law, for women, and the home. Churches are better attended in Washington than in the Middle States, and there are not one-tenth as many hoodlums, or parasites upon society.[50]

As with Granger, this visitor viewed these virtues as vital to creating a successful class of farmers. Likewise, a report by the Washington Irrigation Institute lauded the importance of a large rural population as the "backbone of any nation – *physically*, *commercially*, and *intellectually*."[51]

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[48] Quoted in W. Thomas White, "Main Street On the Irrigation Frontier: Sub-Urban Community Building in the Yakima Valley, 1900-1910," *Pacific Northwest Quarterly* 77, no. 3 (July 1986): 96.

[49] Ibid.

[50] Joseph E. Wing, "Washington State College at Pullman," *Better Fruit* 3, no. 4 (October 1908): 30.

[51] "Settling the Irrigated Lands," Washington Irrigation Institute, ca. 1914. Northern Pacific Company Records, Box 137.B.16.7B, Minnesota Historical Society.

Most settlers came from the Midwest, and while many had prior farming experience, they learned that irrigated farming and orchards were altogether different. When boosters persuaded Roscoe Sheller's family to leave their hardware store in Illinois in favor of a irrigated farm in Sunnyside, they assured the family that its lack of general farming experience would not be a detriment. It made no difference to boosters that many new orchardists from the Midwest had been professional men, store owners, school teachers, or skilled workers such as carpenters. Orchards would take care of themselves, the boosters claimed, because anyone could learn how to take care of them. Boosters became sloganeers, exclaiming: "Wenatchee, where dollars grow on trees." Many inexperienced farmers with get-rich-quick dreams jumped at the chance to own part of the action.[52]

Some Americans truly believed that a return to farming was the answer to the ills of society. Farm owners were seen as independent, self-sufficient, and of good moral character. Despite the lofty rhetoric, the reality of farming was much different. From the beginning, it was a capital-intensive system that strove to maximize regional resources for profit. Irrigation and railroad systems were expensive to construct and maintain, and orchards required a large capital outlay to cover land, trees, spray, packing materials, storage, and transportation costs. The investment in rail and irrigation systems rested on the assumption that the land would be economically productive. After all, this was part of the boosters' pitch: irrigated orchards produced greater yields and a far superior product than non-irrigated orchards. Because of the heavy investments necessary to produce fruit,

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[52] Eva G. Anderson, *Pioneers of North Central Washington* (Wenatchee, WA: *Wenatchee World*, 1980), 425.

from the beginning, Washington growers had to seek the most lucrative markets. In the 1860s, those markets were the mining camps of the intermountain West. After the arrival of irrigation systems and railroads, their markets became eastern cities such as New York, Boston, and Philadelphia. This was not a system where an independent farmer could load his apples on a wagon and sell them. The farmer, like it or not, was connected to the railroad, the irrigation system, the bank, and eastern consumers.[53]

People were important for the whole system because irrigation systems were expensive to construct and operate, and they relied upon large numbers of users to spread the costs across the whole system. Additionally, irrigated lands were more valuable than dry lands, and investors hoped to make a profit on their investment. Not only did railroads require goods to move on their lines, local economies depended upon growing populations. Fueled by promotion and the implementation of irrigation schemes, the Yakima Valley's population tripled between 1900 and 1910, and "boosters' promises of prosperity seemed realized for many settlers as land values rose from $7.81 per acre in 1900 to $126.56 by 1910"[54]

Contrary to the claims in horticultural magazines, local newspapers, and railroad promotional literature, establishing an orchard required a substantial outlay of capital. Farmers had to purchase land, trees, and water rights, not to mention the costs associated

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[53] Some fruit was consumed locally or shipped to cities on the Puget Sound, but these markets were never enough to absorb all of the fruit produced by the state's irrigated farms. From the beginning, those promoting the apple industry had their eye on national and international markets. Railroads also encouraged long-distance shipments as it was more profitable.

[54] White, "Main Street on the Irrigation Frontier," 95.

with building a house and other non-farm related expenses. For example, the average settler on the Sunnyside canal in the early 1900s who purchased a 40 acre orchard required approximately $3500 for land, water rights, and housing -- a jolting amount of money for land that would not turn a profit for the first five to seven years.[55] Similar figures appeared in a 1912 promotional brochure produced by the Yakima Commercial Club. The brochure put the total expense of "developing from raw land to an apple orchard" at $34.50 per acre for plowing, leveling, purchasing, and planting orchard stock. An additional $55 was allotted per acre for four years of irrigation, bringing the total expenses from planting until bearing to a grand total of $89.50 per acre.[56] Despite the high start up costs, farmers who weathered the first few years of orchard operation could hope for handsome returns. By 1918, improved irrigated land watered by the Sunnyside canal sold for as high as $1000 per acre, prompting many farmers to sell portions of their acreage, thereby reducing their overall farm sizes and increasing the total number of farms.[57]

Added to this was the fact that orchards generally required five-to-seven years before they bore fruit, meaning that families had to find alternate methods of support in the interim. This was more difficult than prospective orchard owners ever imagined. Wenatchee orchardist Charles Keiser purchased land along the Highline in 1904, and fresh from the Midwest, Keiser, who had never seen apples grown in volume, had taken

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[55] Fahey, *The Inland Empire*, 94.

[56] *Yakima Valley Washington*, 29.

[57] Fahey, *The Inland Empire*, 94.

the boosters' slogans for gospel. "Somehow I had the delightful delusion that all an orchardist had to do was to pick apples in the fall and sit around the rest of the year," Keiser later recalled. "To make that place pay, I almost literally sweat blood, but the debts mounted." Ultimately Keiser was forced to sell his orchard and find employment elsewhere.[58] Many other orchardists, like Keiser, were forced to sell their orchards because they were unable to make a living from them.

Another solution was absentee ownership. For some, this became an economic necessity, while for others it was a fanciful dream encouraged by promotional literature. One Wenatchee resident, Dr. Isaac Hubbard, saw an exhibition at an Illinois fair that persuaded him to buy twenty acres of fruit land from the Chelan Land Company for $9000. Hubbard remained an absentee owner for eleven years, and he spent all his spare funds on the orchard. "Only one of those eleven years did we realize any cash whatsoever," remembered Hubbard, "and every penny of that had to go into improvements." Hubbard and his wife eventually decided to sell the land.[59] Some absentee owners eventually took up residence on their land, but some expressed concern that absentee owners were detrimental to industry development and community growth. For example, the Grandview Orchard Tracts in Yakima County contained approximately 1,000 acres with sixty different land owners. The tract was irrigated by the Sunnyside Canal, and therefore fell under the jurisdiction of the U.S. Reclamation Service. Of the owners, thirty-five lived on their land, while twenty-five did not. Many of the absentee

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[58] Anderson, *Pioneers of North Central Washington*, 425-428.

[59] Ibid., 559.

owners were doctors, lawyers, or businessmen living in Seattle, and the Washington Irrigation Institute identified what it regarded as the key problems with absentee ownership:

> The lawyer, doctor, merchant, or the plumber, carpenter, or bricklayer in a distant city who wishes to accept . . . a farm unite under a U.S. Reclamation Service project must abandon his only means of making a living if he goes to live on the land. More than that, he is not usually the kind of a man who knows how to farm and a farmer would not give him his board for what he could earn. Hence while he has little or no capital, he does have in the town an earning capacity greater than his living expenses, but if he attempts to go on the farm unit to improve it and make a living he at once becomes a liability and not an asset in the community.[60]

Owning irrigated farms could be a double-edged sword for their owners, especially for those lured by promise of booster literature. While railroads and irrigation systems alike needed farmers to function, they needed farmers who were solvent and could make economic contributions in the form of transportation and water fees.

Others, like George Batterman, turned to other crops to support their families while waiting for their trees to start bearing. Many orchardists planted alfalfa or vegetables in between the rows of their orchards. Batterman purchased land in Wenatchee in 1906, and he planted vegetables and melons which he sold to a Wenatchee broker. Articles in horticultural magazines such as *Better Fruit* offered multiple opinions on this practice. While making a living by branching out into vegetables was a common practice, some believed that it distracted orchardists from their true purpose. One *Better Fruit* reader from North Yakima wrote in 1906 that, "Where land can be made to give

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[60] Washington Irrigation Institute to Franklin K. Lane, Secretary of the Interior, August 31, 1914, Northern Pacific President Subject File, Box 137.B.16.7B, Minnesota Historical Society.

returns that our fruit land can, the owner cannot afford to devote any of it to raising the few tons of hay or the few sacks of potatoes he will need." The editors agreed, praising the letter "from a man after our own heart who came out of the crowded unhealthy wholesale business of the city and engaged in fruit growing on business principles."[61]

Farmers received conflicting advice on what to grow in their orchards, and this debate led to a discussion of the role of farmers in this new, capital intensive irrigated landscape. Some experts advocated monocroping and standardized processes for growing fruits. Others lamented this development and saw it as running counter to the ideal of the self-sufficient, independent farmer. The two sides of the argument were not always clear cut because experts writing on the subject were conflicted themselves. On the one hand, a high-quality, standardized product made it easier to compete on the commercial market and bring enough profit to subsidize the region's complex infrastructure. Farmers who devoted the most care and attention to their trees were more likely to grow a superior product that could be sold for a higher price. On the other hand, farmers, especially in the early years of the twentieth century, had to face the hard realities of economic survival. They could not afford to wait for five years while their trees matured. In the meantime, they had to grow something to support themselves, and they were suspicious of the experts who told them not to. Relying on a monocrop of anything was too much of a gamble, as grower L.S. Smith wrote, like "roulette, racing, or rum." Smith made his case before his fellow growers at the 1913 Annual Meeting of the Washington State Horticultural Society:

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[61] "True Independence is Orchardists' Lot," *Better Fruit* 1, no. 6 (December 1906): 14.

> There are perhaps some few individuals who can make a sort of a success growing nothing but apples. Even do I know a great many who have at least amassed considerable wealth producing only apples. At the same time I know that numerous men have made fortunes from wheat. But most of these are speculators, and for every one that has made good a hundred have scored a total failure.[62]

As Smith observed, earning money from a single grain crop was much different than growing apples. A grain crop such as wheat produced returns in the first year, while apple orchards took five-to-seven years before they produced a reliable and profitable crop. Add to this the vagaries of weather, insects, and other natural events beyond a farmer's control. The reality was that farmers had to find ways to support their families while waiting for their trees to begin producing, and this frequently meant ignoring the advice of college-trained horticulturalists and planting secondary crops anyway.

Second, orchardists who had no experience with fruit trees lacked experience with other crops as well. Smith highly recommended diversifying by keeping half of one's land in alfalfa and raising livestock such hogs, dairy cattle, or poultry.[63] Yet many new orchardists knew as little about dairy cattle as they did about orchards. This led to failure on two fronts: in the orchard and with the alternative crop or livestock. Arthur Bouquet, in an article for *Better Fruit*, argued that it was these inexperienced farmers who gave intercropping, planting two or more crops together in the same field, a bad reputation. "[Intercropping] has been so abused as to very materially damage the trees and make but little on filler," he wrote. "I well remember the sight of an orchard which I saw not long ago which was so intercropped with rhubarb as to make it apparent that the owner was

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[62] L.S. Smith, "The Fruit Grower Should Diversity," *Better Fruit* 8, no. 1 (July 1913): 35-36.

[63] Ibid., 37.

growing a rhubarb crop with trees between."[64] Some crops such as rhubarb and asparagus could overrun an orchard and choke out young trees, making them poor choices for intercropping. The decision to use such crops illustrated the farmer's lack of knowledge. Experts recommended planting alfalfa or peas because their nitrogen-fixing properties enriched the soil and complimented the orchards already in place. Furthermore, these crops were easier to market, whereas vegetables they planted, like fruit, were perishable and needed to be of a very high quality to compete on the market.

The issue of whether or not to diversify extended beyond the simple necessity of supporting one's family, for it involved a deeper philosophical issue at the heart of American agriculture. As the nation became more industrial and urbanized, Americans debated the future of rural life. Some believed farmers would benefit from new technology and standardization, while others saw this as the degradation of the core values of rural America: hard work, independence, self-sufficiency. James J. Hill opposed the trend toward monoculture and intensive, large-scale agriculture. He "promoted the more traditional, diversified, small-scale, commercial family farm," historian Claire Strom writes, "run by the same yeoman farmer lauded by Thomas Jefferson in the eighteenth century."[65] Despite his promotion of scientific farming methods, including irrigation, agricultural shows, education, and advances in breeding, Hill did not want these advances to change his fundamental vision of the American farmer. In his book *Highways of Progress*, Hill outlined his vision for the agricultural

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[64] Arthur G.B. Bouquet, "Intercropping Vegetables in the Commercial Orchard," *Better Fruit* 8, no. 6 (December 1913): 17.

[65] Strom, *Profiting From the Plains*, 19.

future of the nation. Even as he himself engaged in an ever-expanding capitalist, industrial enterprise, he was opposed to the industrialization of farms. He argued that cultivation needed to be "as carefully studied and applied as are the details of manufacturing processes or manipulations of a chemical laboratory,"[66] and that farmers should increase production to meet the demands of the growing nation; he insisted, however, that this could be accomplished by small, independent farmers on diversified farms. It is ironic indeed that the scientific advances that Hill supported encouraged the rise of industrialized agriculture.

Taking a slightly different tack than Hill, Washington State College professor O.M. Morris lamented turning farming into a business, and he feared the impact it would have on farmers. "The net returns to the farm and the farmer are two different things," he wrote, "but the farmer must be considered first."[67] To this end Morris recommended that farmers carefully study all aspects of the crop they intended to plant before making a full commitment to specialization, for it was then, and only then, that a farmer should gradually begin making the transition. Although Morris grudgingly admitted that specialization was an unavoidable trend, he also argued that farming was different than other forms of business. "The business of the manufacturer or business man is almost if not quite independent of the home," he wrote. "It supplies the cash to purchase all of the necessities and luxuries of the home, but furnishes very few of them directly or indirectly

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[66] Hill, *Highways of Progress*, 36.

[67] O.M. Morris, "Fruit Growing and Diversified Farming," *Better Fruit* 8, no. 6 (December 1913): 21.

except through direct purchase."[68] Farming was different because there was no separation between the business sphere and the home. Morris and others argued that turning farms into businesses compromised home life because farmers were expected to be self-sufficient and capable of producing many of their home needs themselves; growing a specialized crop prevented this. In making this argument, however, Morris overlooked one key factor – that farmers were consumers too. Like all other Americans, farmers were drawn to the latest consumer goods and technology. Innovations such as the *Sears* catalog, railroads, and rural free delivery enabled farmers and their families to enjoy the same goods purchased by their urbanized cousins. While farmers often railed against the evils of urban and industrial settings, they were often the first to purchase new, mechanized conveniences such as automobiles. New consumer goods not only made farming easier, but they allowed for a greater degree of specialization.

Unlike Morris, some critics believed that business and farming were not mutually exclusive. Not only could both co-exist, but the two strengthened each other. In a 1914 report, the Washington Irrigation Institute argued that farming built men of character who were necessary for leading the nation. Not only had many of the nation's top business leaders been raised on farms, but "many nerve-racked, broken down, business and professional men have regained their health by getting back to the farm." If the farm was a place of rejuvenation and strength that revived the weary businessmen, why then should they not help the farmers become more efficient? Farmers, the report stated, "are the food-producers of the world, and without them the world would starve to death in less

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[68] Ibid.

than a month." This was a great responsibility, and modern farmers could not be expected to shoulder this burden alone. A rural population that fed the nation and preserved hallowed national values was something to be cherished. Growing specialized crops in irrigated regions required

> helpful suggestions and aid in the marketing of crops, business judgment to plan many of the details for each farm, and tact enough to direct the settler's energy without making him feel that he is being bossed or managed, for it is one of the compensations of farm life, that the farmer is his own boss and manager.[69]

The Washington Irrigation Institute saw the financial plight of farmers, especially those on irrigated tracts, as a national crisis. Although farmers were the backbone of the nation, starting a farm was an expensive proposition that left most farmers with large debts, but the institute believed careful management and efficient business practices could make farms more profitable. Modern technology such as trolley lines, phonographs, telephones, automobiles, and mechanized farm equipment such as tractors and power sprayers brought farmers closer together as communities and made rural life more attractive. As the institute concluded, "the many labor-saving devices remove a lot of the drudgery and enable the intelligent worker to get greater efficiency from his efforts than ever before."[70] These arguments notwithstanding, farming, especially in irrigated areas, required specialized knowledge and skills, including the use of latest technology and scientific methods.

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[69] "Settling the Irrigated Lands," Washington Irrigation Institute, ca. 1914. Northern Pacific Company Records, Box 137.B.16.7B, Minnesota Historical Society.

[70] Ibid.

Despite the setbacks in establishing irrigation systems and productive orchards, throughout the 1890s and early 1900s, farmers and boosters continued to foster unrealistic visions Washington's apple orchards' wealth and prosperity. The number of bearing apple trees in central Washington increased from 25,146 in 1890 to 346,804 in 1900, and by 1910 there were nearly a million trees of bearing age in the district.[71] Apples were first shipped out of Wenatchee in 1900, and by 1904, the first year a substantial crop was produced, 587 cars of apples were shipped from Wenatchee. By 1909 that number had grown to over 2,000 cars.[72] In 1907, over $1 million of fruit was shipped out of the Yakima Valley. Apples dominated the fruit crop, with the North Yakima crop accounting for $200,000 dollars by itself.[73] While many orchardists failed, many others managed to survive the initial phase of development, and some capitalized on another's failure by purchasing an established orchard. For most, the quick wealth promised by boosters never materialized, and the fledgling industry still faced monumental challenges. Orchardists needed to become educated and trained in horticultural methods, and farmers had to learn to adapt to the unique soil and the climate. Pests, tree diseases, frosts and other dangers to orchards had to be combated. And once these problems were dealt with, there was still the daunting task that faced all apple growers: how to sell and transport their fruit to markets a continent away.

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[71] Washington Crop and Livestock Reporting Service, *Washington Tree Fruits* (Seattle: Washington Crop and Livestock Reporting Service, 1952), 2.

[72] Otis W. Freeman, "Apple Industry of the Wenatchee Area," *Economic Geography* 10, no. 2 (April 1934): 170. Each car represents 630 boxes of apples.

[73] "Orchard Development in the Yakima Valley," *Better Fruit* 2, no. 8 (February 1908): 11-13.

Chapter 3

Saplings, Sprays, and Specialization: Taming the Natural Environment

> Wouldn't you rather grow ONE extra fancy apple than a dozen culls?
>
> - Yakima horticulturalist

> We mounted it on a crude sled where the "cranker" could ride while the team dragged it in our orchard. It belched clouds of flour-fine dust of lime, sulphur, Paris Green, and other ingredients, intended to suffocate living insects and leave a coating of poison on young apples that would send any bug attempting to taste one to a violent death – if we were to believe the story printed on every sack. If the stuff choked worms and bugs as effectively as it did us, we'd have the cleanest crop in the whole world.
>
> - Roscoe Sheller

While railroads, real estate agents, and local boosters promoted land sales by arguing that farming was the key to much desired personal independence, the very foundation of the Jeffersonian agrarian republic, they also encouraged settlement by arguing that farming was so simple anyone could do it. Anyone could accomplish the American dream of land ownership and could become wealthy in the process. The mythological idea of an idyllic farmland populated with strong, independent farmers was appealed to settlers, and it became a useful marketing tool for railroads. Many involved with the apple industry went to great lengths to perpetuate this vision. Railroad brochures, local newspapers, and horticultural publications such as *Better Fruit* were filled with testimonials from happy, successful farmers, many of whom moved to

Washington with little to no farming experience. In these testimonials, the inexperienced city dweller watered his trees and watched the money pour in.

This myth, however, was flawed on two counts. First, farmers required instruction and experience to make their orchards successful. Cultivating apples trees required specialized knowledge, so it fell to horticultural associations and state land grant colleges to provide farmers with the necessary information. Second, farmers received a strong contradictory message from the industry: independence and individuality were detrimental to the success of the industry. Instead, cooperative action was needed to create a standardized, industrialized system capable of competing on the national and international market. Washington could not compete with eastern growers in terms of cost because western apples were more expensive due to high transportation rates, but they could compete in terms of quality. Producing high quality apples required vigilance on all fronts, and the cooperation of individual farmers, state and local governments, and the railroads.

Growing food on an industrial scale makes little sense unless markets are available. In the case of apples, the market was a continent away, in population centers of the East Coast. West Coast fruit faced stiff competition from eastern growers who had the advantage of geographic proximity to the markets. Since transportation costs added considerable overhead, western growers had to compensate by growing a superior product, the perfect "fancy" apple. Growing perfect apples requires a great deal of labor. Trees have to be properly pruned to ensure that adequate sunlight and nutrients reach the fruit, and insects, fungi, and other diseases have to be controlled. Blemished or damaged fruit had to be culled, soils had to be properly fertilized, and trees had to be protected

from frost. Orchards required specialized skills that were often beyond the expertise of many new owners. Moreover, scientists were just beginning to study and understand the effects of insects, insecticides, fruit development, and disease, all of which was vital to creating and protecting a viable industry. In response to these problems, the United States Department of Agriculture (USDA), state agricultural colleges, and horticultural societies undertook an education campaign that sought to educate rural farmers about their orchards.

Many families learned painful and costly lessons about how not to care for orchards. Wenatchee resident Jack Scaman recalled his early days in the valley when he worked as a laborer for orchardist S.A. Burbank. Every tree Burbank planted died, because of what Scaman called his "screwy" technique: "He'd dig a big hole, stick a tree into it, dump in some water, tramp down the clay around it, pour in more water and . . . tramp again. A concrete wall around every tree, that's exactly what he made."[1] Another novice orchardist, Jake Miller, nearly killed his trees in 1895 after applying too much aphis spray.[2] Overuse or misapplication of sprays caused costly losses for many early orchardists.

The Sheller family, who moved to the Yakima Valley in 1898, learned that orchard maintenance was far more difficult than they anticipated. As son Roscoe described it, a noted horticulturalist visited their orchard and scolded his father for

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[1] Eva G. Anderson, *Pioneers of North Central Washington* (Wenatchee,WA: *Wenatchee World*, 1980), 66.

[2] Ibid., 399.

neglecting to thin his orchard, warning that thinning was necessary to save the orchard from otherwise certain failure. The elder Sheller stood in shock as he watched the stranger pluck small apples from his trees. "I know exactly how you feel," the horticulturalist explained. "I endured the same torture, when a total stranger gave me my first lesson in thinning. I felt like shooting him, certain he was destroying my crop. . . . Wouldn't you rather grow ONE extra fancy apple than a dozen culls?"[3] Sheller immediately saw the error of his ways, and he vigorously set about thinning the entire orchard. While Sheller's account is nostalgic and folksy, ultimately there was happy a ending, but the episode he recounted typified the difficulty families faced in starting an orchard.

Education was important if farmers were to understand the best methods for planting, pruning, spraying, and harvesting their crops. Innovation has been the "long suit" of American agriculture, but even more so in the last half of the nineteenth century because educating farmers became even more imperative as new territories opened and were put into production, often by those with scant farming experience. The expansion of the land grant college was begun by the Morrill Land Grant Act of 1862. In addition to providing economical land, it mandated the establishment of land grant colleges across the nation. States established research stations, extension offices, and demonstration farms where scientific principles could be applied to farming. Initially, these programs met with resistance because academics did not consider farming a legitimate topic of study, and farmers distrusted elitist institutions such as colleges. Nonetheless, land grant

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[3] Roscoe Sheller, *Blowsand* (Portland, OR: Metropolitan Press, 1963), 108-109.

colleges helped legitimize agriculture as an area worthy of academic study and scientific scrutiny.[4]

Farmers, however, were more difficult to reach and persuade. Throughout the late nineteenth and early twentieth centuries, agronomists struggled to devise new methods to convey information to farmers. Periodicals and bulletins provided one avenue, but farmers did not always read or absorb the new information. Eventually, colleges adopted less formal agricultural institutes that offered farming lectures. Agricultural extension offices, county agents, and demonstration farms attempted to create closer, local relationships between farmers and educators.[5] Railroads also became heavily involved in education as a means of increasing yields and encouraging farmers to grow products that could be transported on rail lines.

Agricultural colleges saw themselves not only as institutions for advancing research, but as institutions that shaped young people into model citizens. "I fear that there are those who have a misconception of the work which the College is designed to

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[4] For a full treatment of the development of agricultural extensions and land grant institutions, see Roy V. Scott, *The Reluctant Farmer: The Rise of Agricultural Extension to 1914* (Urbana, IL: University of Illinois Press, 1970).

[5] Initial research on fruit trees took place in Pullman at the Washington State College campus. The USDA was the first to open a formal fruit tree experiment station. The Tree Fruit Research Laboratory was established in 1913, and it was originally called the "Handling, Transportation, and Storage Investigations Unit." United States Department of Agriculture, Agricultural Research Service, "Wenatchee, Washington. History," http://www.ars.usda.gov/Aboutus/docs.htm?docid=1107 [accessed September 7, 2008]. Although Washington State College researchers and the USDA had been researching fruit trees in all of Washington's growing districts, no formal extension research facility existed until 1937 when WSC established the "Tree Fruit Research Extension Center" in Wenatchee, Washington. Washington State University Tree Fruit Research Extension Center, "About WSU-TREFC," http://www.tfrec.wsu.edu/about.php (accessed September 7, 2008).

do," remarked George Lilley, experiment station director, at the first ever Washington State College Farmers' Institute, held in 1892. "It is the purpose of the school to teach those of the rising generation and prepare them for the industries, the responsibilities and the work of life." Lilley went on to explain that the purpose of an education at the agricultural college was not to engage people in menial work, but to mold well rounded farmers, who were conversant not only in the latest scientific methods, but also the arts as well. These individuals were training to be America's future leaders, and in an era when Americans were increasingly moving to urban areas, "such training preserves habits of industry and manual exertion, and cultivates a taste for home and rural life."[6]

Publications such as *Better Fruit*, published by the Northwest Fruit Growers' Association, generally endorsed the work of the USDA and agricultural colleges, but these institutions were not the sole source of information. *Better Fruit* often featured articles by laymen, average farmers who reported on what worked in their orchards. Despite reports that planting alfalfa in an orchard was bad for the trees, E.L. Stewart of Prosser persisted in planting alfalfa in a last ditch effort to prevent his orchard's fine soil from blowing away. Rather than harm the trees, the alfalfa prevented erosion and the stubble from each years crop made an excellent fertilizer.[7] In another article, grower George Wright warned that while soil tests were recommended to determine the amount of nutrients in one's soil, one could not rely solely upon the chemist report. For example,

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[6] Washington State Agricultural College and School of Sciences, *Report of Farmers' Instituted held at Colton, Washington*, Agricultural Experiment Station, Bulletin No. 2 (Olympia, WA: O.C. White, 1892), 21, 23.

[7] E.L. Stewart, "My Experience in the Use of Dust Spray," *Better Fruit* 1, no. 11 (May 1907): 5.

a test might show a soil to be high in potash, when in fact it might be high in an insoluble form of potash that cannot be absorbed by the trees.[8] Given the skepticism farmers had for scientific experts, advice from neighbors and friends may have been taken more seriously.

While farmers who moved to the arid regions of central and eastern Washington had to contend with the problems of irrigation, they initially believed that they had been spared the one problem that plagued fruit growers everywhere else in the nation: pests. Washington had a small number orchards throughout the nineteenth century, and they were planted in a pest free climate. However, as with other parts of the country, as the commercial fruit industry grew, so did pests.

Commercial orchards developed as transportation made fruit growing more profitable, but transportation that encouraged the growth of the industry also facilitated the movement of pests. Poor nursery stock, improper spraying, and the transportation of infected fruit all contributed to the problem. One study done by Washington State College found that orchards located near packing houses were more likely to have infestations.[9] Washington farmers struggled to battle insects such as Codling moth, San Jose scale, and wooly aphis, fungi, and other infectious agents, but they had the advantage of learning how other fruit regions responded to such problems.

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[8] George Wright, "Suggestions to Apple Growers of the Northwest," *Better Fruit* 8, no. 3 (September 1913): 30.

[9] A.L. Melander, *The Wormy Apple*, Agricultural Experiment Station, Bulletin No. 68 (Pullman, WA: State College of Washington, 1905), 8.

Commercial orchards in the United States first developed in New York. Its orchards' close proximity to large population centers such as New York City and Philadelphia, combined with the ease of transportation afforded by the Erie Canal, made commercial fruit growing there a profitable proposition. During the 1850s and 1860s the number of commercial orchards in upstate New York increased rapidly, but expansion brought a variety of organisms which attacked the trees and the fruit. Insects -- most notably the Codling moth -- scabs, and fungi became so rampant in many New York orchards that by the 1880s and 1890s many farmers had no choice but to destroy their trees. Farmers and scientists gradually developed ways to fight back against these pests through the use of poisons. By the 1870s and 1880s, orchardists in western New York pioneered the use of sprays such as Paris green and other arsenical poisons, and their use stabilized the industry by the turn of the century. This combined with the introduction of new cover crops, improved tillage methods, the growth of export trade, cooperative cold storage, and better fruit grades ensured that New York would remain the predominant commercial apple producer for years to come.[10]

Closer to home, the California orchard industry provided a model for Washington growers in their attempts to control pests. The California fruit industry was in full swing by the 1890s, while Washington's was still in the early stages of development. Like Washington, California growers had to contend with distant markets, and they strove to provide a superior product to compete with fruits grown on the east coast. Spraying and pest control had become vital to the success of the industry, and to help protect the

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[10] S.A. Beech, *The Apples of New York*, vol. 1 (Albany, NY: J.B. Lyon Company, 1905), 13-14.

industry, California implemented laws regulating the purity of pesticides. It also passed a Horticultural Quarantine Law in 1899 that authorized agents to inspect all fruit that crossed California's borders in an effort to remain pest free.[11] Although Washington never passed such a stringent law, the state eventually implemented controls to regulate the purity of insecticides and to authorize horticultural agents to inspect orchards for pests.

While promotional literature from the 1890s and early 1900s portrayed Washington as something of a pest-free paradise, in fact insects were a problem for all fruit trees from the outset. Two of the most feared were the Codling moth and San Jose scale. Both of these pests were serious threats to farmers because of damage they did to trees and crops. The Codling moth laid its eggs on apples, allowing its newly hatched larvae to feed on the fruit. The San Jose scale damaged orchards by attaching itself to trees and feeding on the sap. The yellow-colored females lived in colonies and secreted a waxy grayish-black coating, or "scale," over themselves. At times, the colonies grew so large, that a tree's bark was longer visible and had the appearance of being "coated with fine ash-colored bran."[12] In later stages of infection, fruit became cracked or misshapen.

Wormy fruit and scales were not new phenomena. The Codling moth came to North America when the first colonists brought trees from Europe, and its spread paralleled the expansion of apple and pear trees across the continent. San Jose scale most

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[11] Steve Stoll, *The Fruits of Natural Advantage: Making the Industrial Countryside in California* (Berkeley, CA: University of California Press, 1998), 102, 112.

[12] A.B. Crodley, "The Destructive San Jose Scale," *Better Fruit* vol. 1, no. 6 (December 1906): 4.

likely arrived in Washington on nursery stock imported from California, and by the 1890s it was widespread in eastern Washington. According to researchers at Washington State College, the San Jose scale had been reported in Washington Territory as early as 1885.[13] Unlike Codling moths, scales are not very mobile, and they spread through human activity such as fruit packing and transporting nursery stock.

Regardless of how they arrived, by the late 1890s there was a growing concern about the impact of insects and disease on the infant apple industry in Washington. Although insects were common to orchards, the need for a high quality, standardized product underscored the necessity of spraying because the financial losses caused by Codling moths alone had a devastating impact on the industry. Crop losses of 40 to 50 percent to worms were not uncommon in the early years of the industry. A. L. Melander, professor of entomology at Washington State College, reported that only half of Washington's 1904 commercial crop was shipped which translated into 1500 cars worth $600,000. He attributed at least $200,000 of lost profit to the Codling moth.[14]

Local newspaper editors, horticultural magazines, local and federal horticultural agents railed against insects, depicting them as mortal enemies to be vanquished. Nature

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[13] Reports indicate that the San Jose scale migrated to Washington via California citrus orchards. In local newspapers particularly, there was an underlying contempt and willingness to blame California for the scales' presence. The argument was made that Washington could have been a fruit growing utopia if not for these invasions. On the other hand, California's experience with the scale was a great help to the Washington industry because California had already begun experiments with sprays and other methods to combat the pests. "Spraying for Scale," *Yakima Republic*, March 31, 1899; C.V. Piper, *Insect Pests of the Garden, Farm and Orchard*, Agricultural Experiment Station, Bulletin No. 17 (Pullman, WA: State College of Washington, 1895), 40.

[14] Melander, *The Wormy Apple*, 5.

could be harnessed, as farmers had demonstrated with irrigation, so there was no reason why persistence, fortitude, and a "can-do" attitude could not resolve the problem. Calls were made to spray trees with pesticides such as Paris green, to turn pigs loose in orchards to eat the insects, and to monitor neighbors to make sure everyone acted responsibly. "There must be a live interest manifested in the subjection of these blood-thirsty Spaniards," wrote Orlando Beck, Yakima County Horticultural Inspector, likening the war on pests to the recent Spanish-American War. "A few Dewey's is all we need," Beck continued, "and the United States has plenty of them," and he then proposed that the state legislature appoint an agent to destroy the pests, or, at the very least, to support experiments for new extermination methods. Despite the panicked tone of his editorial, Beck remained optimistic: "The dark clouds that have been hanging over the west are breaking away and the sky is clearing. The sun will soon be shining with full force as it used to do a few years ago."[15] Beck's attitude toward orchard pests was a common one: pest problems were described in apocalyptic terms, but horticulturalists maintained unshakable optimism in their belief that a scientific solution was at hand.

Insects required a variety of chemical sprays. The most important pesticides for controlling Codling moth were derived from arsenic.[16] These poisons bore colorful names

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[15] Orlando Beck, "Pests of the Orchard," *Yakima Republic*, February 3, 1899, 3.

[16] While farmers used sprays derived from arsenic, arsenic itself was not recommended because it burned trees. Piper, *Insect Pests of the Garden, Farm and Orchard*, 9. Many writers refer to arsenic generally when discussing pesticides. Most often a reference to arsenic in this context refers to the most common arsenical compound, a grey, metallic compound also called arsenic trioxide, or "white arsenic." This is a different chemical form of arsenic than the one used in Paris green, which is

such as "Paris green" and "London purple," and they were relatively inexpensive and easy to obtain. In the nineteenth century, Paris green (copper acetoarsenite) was commonly used as a pigment. When or how its insecticidal properties were discovered remains unclear, but by the 1870s its was being marketed as a pesticide in addition to its widespread use as a pigment in paint, wall papers, fabrics, and other consumer goods. By the late nineteenth century, London purple (calcium arsenite), the by-product of aniline dye used in the British textile industry, was being marketed as an alternative to Paris Green. Before the discovery of its insecticidal properties, manufactures dumped London purple, a textile waste product, at sea. By the early twentieth century, both products had largely been replaced by lead arsenate, which remained the most popular pesticide until the introduction of DDT after World War II. Lead arsenate was more expensive, but it did less harm to trees.[17]

In addition to pesticides, fungicides were an important part of the chemical arsenal. One of the most well-known fungicides was Bordeaux mixture or copper sulfate. Although there are records of copper being used as a pesticide as early as 1807, modern Bordeaux mixture originated in the vineyards of France. Farmers sprinkled a copper compound known as verdigris on the portions of their vineyards that bordered roads to discourage pilfering. By the mid-1880s, verdigris was replaced with copper sulfate which was much cheaper. When an epidemic of downy mildew, a fungus that infected vine leaves and caused them to drop prematurely, threatened French vineyards in 1878,

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copper acetoarsenite. James Whorton, *Before Silent Spring: Pesticides and Public Health in Pre-DDT America* (Princeton, NJ: Princeton University Press, 1974), 20.

[17] James Whorton, *Before Silent Spring*, 20-24.

farmers discovered that the copper sprinkled vines remained healthy. This led to further experimentation and the eventual wide-spread adoption of Bordeaux mixture as a common orchard spray.[18] In Washington, Bordeaux mixture was used to combat apple scab, a common fungus that attacked the leaves and fruit of apple trees. The fungi spores created dark olive colored patches on the leaves and fruit. In mild cases, the fungus formed only a few small spots on the apple; the fruit was still edible, but it could not be sold as a top grade fruit. In more severe cases, the scab caused apples to crack open and fall off the tree. A study by Washington State College showed that a solution of copper sulfate and lime eliminated the scab in 89 percent of the trees sprayed.[19]

A scientific and technological solution depended upon farmer education, compliance, and cooperation, for it did little good for a farmer to spray his trees if his neighbor did not do so as well. Local counties tried to enforce the use of pesticides, and they launched campaigns against the Codling moth, San Jose scale, and a host of other orchard pests. Some farmers remained skeptical that spraying was beneficial for their trees, so county inspectors had to enforce compliance. Even if farmers sprayed their trees, it was often applied incorrectly, lessening its effectiveness. Sprays could be misapplied in numerous ways. Farmers could mix the spray solutions improperly, thus weakening the effect of the chemicals. They could spray at the wrong time and fail to interrupt the insects' lifecycle, or they could spray too little, leaving portions of the tree

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[18] George Fiske Johnson, "The Early History of Copper Fungicides," *Agricultural History* 9, no. 2 (April 1935): 67-79.

[19] W.H. Lawrence, *Apple Scab in Eastern Washington*, Agricultural Experiment Station, Bulletin No. 75 (Pullman, WA: State College of Washington, 1906), 5,11.

untreated. Across eastern Washington, inspectors were appointed to fruit growing districts, and in Yakima and Benton counties, fruit inspectors were authorized to "inspect and examine all orchards and enforce compliance with [their] orders in all cases where it is necessary to spray, and to prosecute all cases in violation."[20] Inspector Whitney of Walla Walla scolded growers that they needed to spray with "something besides whitewash." Asotin County used $15,000 of municipal funds to purchase pesticides and spraying equipment, while Chelan County hired a fruit inspector at an annual salary of $1500. Prosser, Washington authorities discussed the mandatory elimination of all infected trees.[21]

Farmers had a variety of options for applying spray to their orchards. The most simple device was a hand-held spray pump that could be operated manually. This type of pump worked fine if only a few trees needed to be sprayed, but they were not adequate for a commercial orchard. Barrel pumps provided a more reasonable option for small orchards. In these devices, the pesticide was placed in a large barrel with a lever. Two men pumped up and down on the lever to create pressure, while a third man operated the spray nozzle. The drawback to manual pumps was that because they applied pesticide under low pressure; it took farmers nearly twice as long to spray their trees with manual pumps compared to high pressure sprayers. High pressure sprayers were available in several different sizes, and they could be mounted to the back of a wagon, or later to tractors or modified automobiles, and driven through the orchard. Some high pressure

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[20] *Yakima Republic*, March 10, 1899.

[21] "Inspectors Say Infected Trees Must Go," *Better Fruit* vol. 1, no. 11 (May 1907): 14.

sprayers used canisters of compressed gas to create enough pressure. Yet another model employed gears connected to a wagon; as horses pulled the wagon through the orchard, the gears would turn and create pressure in the pesticide tank. Tests of this equipment showed that it was necessary to drive past nine trees in order to build up enough pressure to spray the tenth. Horticultural experts preferred the spray pumps powered by gasoline engines which produced the most reliable pressure for spraying trees evenly and efficiently. Not only did these sprayers come in several different sizes, some could be outfitted with multiple nozzles so several men could spray simultaneously. While some farmers may have been intimidated by using this technology, agricultural experts tried to ease their fears by providing information on how to purchase a gasoline powered sprayer and how to troubleshoot minor engine problems. It was "hardly necessary to forgo the advantages of modern methods" for lack of mechanical ability, stated one Washington State College bulletin.[22]

Part of farmers' reluctance to spray was linked to the sprays themselves because many early sprays were untested and could damage the trees if applied improperly. Applying too much spray or spraying at the wrong time could damage blossoms, burn foliage, or even kill trees. Different tree spray formulas complicated matters as well. Some formulas came from agricultural bulletins, some were published in trade publications, while others were included in pesticide company advertisements. Some were of questionable quality, but desperation drove some orchardists to experiment with

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[22] A.L. Melander and R. Kent Beattie, *The Penetration System of Orchard Spraying*, Agricultural Experiment Station, Bulletin No. 106 (Pullman, WA: State College of Washington, 1913), 27.

Figure 1: Men using a barrel sprayer in North Yakima, Washington c. 1901. Yakima Valley Museum Collection, http://yakimamemory.org, 2001-800-074 (accessed March 1, 2009).

Figure 2: Two men working a mechanical sprayer c. 1907. Yakima Valley Museum Collection, http://yakimamemory.org, 2002-803-525 (accessed March 1, 2009).

various treatments. *Better Fruit* advertised several different varieties of insecticides produced by companies across the nation, including Sherwin Williams, the paint manufacturer. While *Better Fruit* published reports from the USDA and state college agricultural stations, as well as periodic editorial testimonials, farmers had no reliable way to evaluate many of the products on the market. As with most consumer products of the time, unless they were affected by regulations passed by state legislatures, pesticides were largely unregulated.

Since arsenicals could not be mixed at home like some spray solutions, farmers had to rely upon manufactured pesticides that might not contain enough arsenic to be effective. To help farmers, the Washington State legislature passed a law in 1901, making it illegal to sell adulterated or low grade sprays in the state. State regulations required that Paris green contain at least 50 percent arsenic trioxide. The law also required the State Agricultural Experiment Station chemist to provide free analysis of pesticide samples. Failure to comply with this law was a misdemeanor that could result in a fine of $25 to $100.[23]

In addition to arsenicals, farmers and scientists experimented with a number of other solutions of varying toxicity and effectiveness. Arsenicals were generally effective against the Codling moth, but they had little effect on San Jose scale. In 1904 and 1905, A.B. Crodley of the Oregon Experiment Station in Corvallis, Oregon, conducted a number of experiments to determine the best type of spray for scale. After trying several combinations of lime, sulfur, salt, copper sulfate, and caustic soda, Crodley concluded that the most effective spray was a combination of lime, sulfur, and salt. In addition to making his own sprays, Crodley tried three commercial sprays available on the market. Dunne's Solid Spray No. 1, a combination of lime, sulfur, and salt, worked relatively well, but it was far more expensive than making the spray from scratch. Dunne's Solid Spray No. 2, identical to the first spray except for the addition of copper sulfate, was slightly better than Dunne's No. 1, but still far less effective than homemade spray. A third spray, Con-Sol, claimed to be a combination of lime, sulfur, and salt, but the

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[23] *Session Laws of the State of Washington, Seventh Session* (Olympia, WA: Gwin Hicks, State Printer, 1901), 19.

product proved worthless. In this case, orchardists fared better by mixing their own sprays at home.[24]

In addition to manufactured pesticides, home remedies offered another solution. In addition to lime, sulfur, and salt sprays, farmers experimented with other sprays, including whale oil, kerosene, sour milk, tobacco, caustic soda, and oil.[25] Agricultural experiment stations in fruit growing regions tested these concoctions to determine their efficacy, and *Better Fruit* published growers' reports that featured methods that farmers had found to be successful. While experimentation debunked some sprays – oil tended to cause plant burns, for example – it did not immediately solve the pest problem. Sprays had to be applied in a specific manner at precise points during the growing season; a misapplied spray was almost as bad as not spraying at all, meaning that education was critical.

Spraying was an unpleasant task, one which some farmers refused to undertake, despite repeated warnings and admonitions from their county fruit agents. Donald Wheeler, son of a White Bluffs orchardist, recalled that everyone he knew hated spraying. Initially, the Wheelers hauled their sprayer on a wagon, but later switched to a modified Model T. Either way, the chemicals' noxious fumes, combined with the desert heat, made the family dread this chore. Wheeler recounted that the county agent "told us we must wear masks but no one did that I know of. I was so hot already! Sometimes

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[24] Dunne's Solid Sprays were distributed by David M. Dunne & Co. of Portland, Oregon. Con-Sol was distributed by the American Horticultural Distributing Company of Martinsburg, West Virginia. Crodley, "The Destructive San Jose Scale," 6.

[25] C.V. Piper, *Insect Pests of the Garden, Farm and Orchard*, 5-65.

already getting up to 100 degrees. I tried a mask once and had to take it off right away; I would have fainted," he concluded.[26] Horticultural magazines and agricultural bulletins advised farmers to wear a mask and cover all exposed skin when working with pesticides. Despite this protection, many of the pesticides burned the farmers and their trees. Caustic soda or lye, for example, burns the skin, and the researcher A.B. Crodley observed that "men declared they would not work for five dollars a day if required to use it," as the spray caused severe burns to any exposed skin.[27]

While liquid sprays were preferred, dry dust sprayers provided an alternative. Rather than mixing chemicals with water to form a liquid solution, dust sprayers used bellows to blow dry poisons on to the tree. Some growers preferred this method of application to liquid sprays because dust "fog" seemed to coat trees more evenly than wet sprays. It was difficult to apply too much dust, and there was no risk of injuring the blooms. E.L. Stewart, an orchardist in Yakima, claimed that he saved an additional 10 percent of his crop by using dust sprays, and it was cheaper; Stewart paid $117 for seven dust sprayings, compared to $237 for six liquid sprays.[28] But dust sprays had their drawbacks. Their application, for example, was no more pleasant for farmers than liquid sprays. Roscoe Sheller wrote about his family's purchase of a duster for their orchard in Sunnyside.

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[26] Nancy Mendenhall, *Orchards of Eden: White Bluffs on the Columbia, 1907-1943* (Seattle: Far Eastern Press, 2006), 155.

[27] Crodley, "The Destructive San Jose Scale," 6.

[28] Stewart, "My Experience in the Use of Dust Spray," 7.

> We mounted it on a crude sled where the "cranker" could ride while the team dragged it in our orchard. It belched clouds of flour-fine dust of lime, sulphur, Paris Green, and other ingredients, intended to suffocate living insects and leave a coating of poison on young apples that would send any bug attempting to taste one to a violent death – if we were to believe the story printed on every sack. If the stuff choked worms and bugs as effectively as it did us, we'd have the cleanest crop in the whole world.[29]

Despite the unpleasantness of the task, Sheller and other farmers continued to apply pesticides religiously in the hopes of improving their crops. According to entomologists at Washington State College, dust sprayers were "unsatisfactory" and "had no place in orchard spraying." Although dust spray appeared to coat trees more thoroughly than wet sprays, the dust tended to blow away instead of settle on to the trees.[30]

Horticultural magazines and agricultural extension pamphlets provided farmers with detailed instructions and tables for proper spraying. The timeline for yearly spraying depended on the pest or disease to be eradicated and on the variety of tree being sprayed. To combat Codling moths, for example, the first spraying had to occur before the calyx closed. The calyx is the outer covering of a blossom, and after the blossom drops and the fruit begins to mature, the calyx forms the bottom of the apple. An ideal time to spray was just as the blossoms started to open, when the calyx and immature petals formed a "cup" where young Codling moth worms often crawled for shelter. As the fruit matured, this opening closed. The idea was to force pesticide into the calyx to prevent worms from becoming established before the calyx opening closed. A.L. Roberts, a contributor to *Better Fruit*, thought that some of his apple varieties were just naturally wormier than

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[29] Sheller, *Blowsand,* 195.

[30] Melander and Beattie, *The Penetration System of Orchard Spraying*, 18.

others, until he realized that some calyces closed earlier than others. Roberts advised that trees "should be sprayed until there is not a dry twig or branch about it, and hardly a calyx on it that is not full of water [containing pesticide spray]."[31] In an early Washington State College bulletin, A.L. Melander recommended a three-time spraying regime for Codling moth. The first needed to be applied before the calyx closed, the second two weeks later, and a third final application after the first brood of moths had hatched. Melander reported that some growers sprayed a fourth time two weeks after the third spraying, and some growers even sprayed a fifth time in September before harvest.[32] A study of spraying methods in the Yakima Valley conducted between 1903 and 1905 revealed that 85 percent of the sprayed fruit was worm free. Of the wormy fruit, an estimated 40 percent showed evidence that the worms had entered through the calyx, meaning that farmers had not properly applied the first, and most important, spray.[33] In several agricultural bulletins, Melander urged farmers to spray directly into the blossom, making sure to fill the calyx so the first brood of worms could not find its way into the apples.

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[31] A.L Roberts, "The Colorado Fruit Growers Endorse Arsenate of Lead," *Better Fruit* 1, no. 1 (July 1906), 10.

[32] Melander, *The Wormy Apple*, 10.

[33] A.L. Melander, *The Control of Codling Moth*, Agricultural Experiment Station, Bulletin No. 103 (Pullman, WA: State College of Washington, 1911), 7.

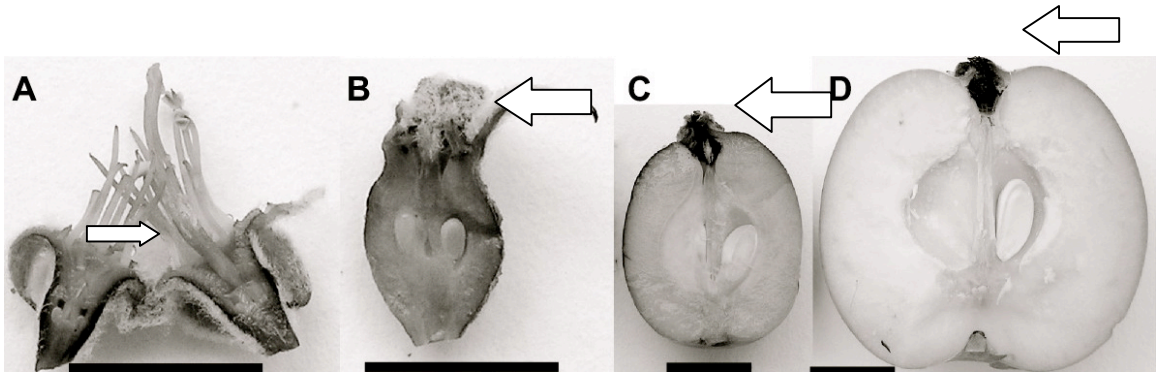

Figure 3: The calyx is the outer portion of the flower that forms the base of the blossom. As the tree blooms, the calyx folds back to reveal the blossom as seen in photograph A. The apple develops below the calyx, and remnants of the calyx remain on the bottom of the apple as it matures, as seen in photographs B through D. Bart J. Jannsen et. al., "Global Gene Expression Analysis of Apple Fruit Development from the Floral Bud to the Ripe Fruit," *BMC Plant Biology* 8 (February 2008), http://www.biomedcentral.com/1471-2229/8/16 (accessed March 5, 2009).

Most scientists and laymen of this time period had a cavalier attitude toward lead arsenate and other potentially hazardous pesticides. In an era before wide-spread testing, government regulations, and consumer advocates, arsenic levels in fruit were of little concern, even though arsenic was a known poison. Part of this laxity was due to the extensive use of arsenic in many consumer goods. Arsenical pigments were used as dyes for products including wall papers, oil paints, fabrics, children's' toys, soaps, and candy.[34] It was also used medically; one of the early symptom of arsenic poisoning, flushed cheeks, popularized its use as a health tonic and cosmetic. Given its widespread use, the level used in pesticides seemed of little concern to most people.

Initial tests on the use of arsenic in orchards supported the public's perception that arsenic exposure was not serious. A.J. Cooke, an entomologist at Michigan State University, conducted spray residue studies in the 1880s. He calculated that most of the

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[34] Whorton, *Before Silent Spring*, 39.

arsenic was removed within three weeks of spraying due to natural actions such as rain. Thus, he concluded, risk from spray was minimal. Other studies, however, concluded that some residue remained on the fruit, although the amounts varied depending on how recently the fruit had been sprayed.[35] These studies were fundamentally flawed because arsenic sprayed on irrigated western orchards could not be washed off trees and fruit by rain. In most irrigated areas, little to no rain fell during the summer months. In addition, the studies were based on recommended scientific applications of arsenic, but many farmers sprayed more frequently than recommended, sometimes within the critical weeks just before harvest when pesticides should not be applied to maturing fruit.[36]

Several experts began expressing concern over mounting levels of arsenic in the food supply. As early as 1891, the British journal *Horticultural Times* criticized the level of residual arsenic found on imported American apples. American growers initially brushed off this criticism and argued that residue had been mistakenly identified, explaining that the apples had been shipped in used flour barrels.[37] For the most part, American entomologists continued to deny the potential hazards of arsenic residue until the 1920s, when complaints from British consumers forced them to reevaluate their position. Tests done in the mid 1920s showed that American apples carried from .016 to .1 grains of arsenic per pound, far more than the .01 grains per pound allowed in Britain.

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[35] Ibid., 31-32.

[36] Complaints about farmers over spraying their orchards were common across the country. Entomologists frequently complained about farmers' overly enthusiastic spraying techniques. Ibid., 33.

[37] Ibid., 68-69.

Pacific Northwest fruit contained higher levels of arsenic than British or eastern fruit because the fruit was grown in semi-arid areas not washed by rain during the growing season and because Codling moth infestations often required farmers to spray at the critical time right before harvest. Scientists at Washington State College tested three methods for removing the sprays: spraying trees with water before harvest, wiping the fruit with a dry cloth before packing, or wiping the fruit with a wet solvent before packing. Just as farmers relied upon the latest technology to spray their orchards, they also relied upon technology to clean their apples. Although there was some discussion about finding an alternative to lead arsenate pesticide, studies showed that a conveyor belt with rotating brushes and nozzles which sprayed a solution of hydrochloric acid on the fruit proved most effective for removing the residues.[38]

A few experts had warned about the dangers of using lead arsenate, but they were in the minority. In 1909, W.P. Headden of the Colorado Agricultural College reported that several trees in Colorado had been afflicted with rotten roots and discolored bark which, when removed, revealed dead trunks underneath. Headden concluded that the damage had been caused by arsenical pesticides that became soluble after mixing with Colorado's alkali soils, causing the trees to absorb the poison. *Better Fruit* published his study, but with a caveat from the editor that expressed some skepticism over Headden's

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[38] F.D. Heald, et.al., *Arsenical Sprays Residue and Its Removal from Apples*, Agricultural Experiment Station, Bulletin No. 213 (Pullman, WA: State College of Washington, 1927), 5, 54-55.

findings.[39] Headden was one of the few experts to express concern over arsenical poisoning, and E.D. Ball of the Utah State Experiment Station drafted a rebuttal, questioning the soundness of Headden's research methods. He stated that "the publication is most unfortunate, as it will cause a decided reaction against a highly successful method of spraying and bring consequential financial loss."[40] A reader also wrote in, chastising the magazine for frightening people away from lead arsenate and claiming that his trees had suffered similar damage due to cold, not arsenic.[41] The positive impacts of lead arsenate sprays in controlling the Codling moth far outweighed any concern about poisoning trees or orchard soils.

Most agricultural experts continued to dismiss the hazards of arsenical sprays and other pesticides, which they regarded as essential scientific tools that helped to overcome the whims of nature. Experts reminded farmers that they were dealing with highly poisonous compounds that were hazardous. For example, the Oregon State College Experiment Station found that samples of cider stored in old lead arsenate barrels showed high levels of arsenic. They also reported instances of livestock dying after drinking from old spray barrels.[42] This information, like that disseminated by other experts, was not

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[39] W.P. Headden, "Effect of Arsenical Poisoning on Fruit Trees," *Better Fruit* 3, no. 7 (January 1909): 13-22.

[40] E.D. Ball, "Is Arsenical Spraying Killing Our Fruit Trees," *Better Fruit* 3, no. 11 (May 1909), 21.

[41] "A.I. Hall Disagrees with Dr. Headden on the Arsenical Poisoning of Fruit Trees," *Better Fruit* 3, no. 11 (May 1909): 33.

[42] "Notes from the Oregon Experiment Station," *Better Fruit* 3, no. 4 (October 1908): 17.

intended to discourage farmers from spraying, rather it was a warning that these poisons should be handled with care. Without sprays, they reminded producers, apples would be wormy and worthless. Chemical sprays allowed growers to create a standardized product, where each apple was as perfect as the next, all in an effort to transform horticulture into an industrial process.

While growers were successful in controlling orchard pests, weather was a factor that could not be controlled; nonetheless, they tried to mitigate its effects. The lack of rain was overcome through irrigation, but damage from severely cold weather was more difficult to manage. Temperatures below freezing were generally not injurious to apples during the winter when trees were dormant, but damage was possible if the trees were exposed to temperatures below 30º F. Growers experimented with different methods of frost prevention. In the late nineteenth century, for instance, viticulturist in Austria used explosives to combat bad weather. The Austrian growers set up six stations on the mountains surrounding their vineyards, and whenever a storm approached, they continually fired mortars from each station until the clouds dissipated. Reportedly, the Austrians were successful in their efforts to save their fruit from inclement weather.[43] Fortunately, most American growers found other methods to protect their fruit, most notably smudge pots and orchard heaters.

Smudge pots worked by creating a layer of smoke that helped insulate the orchard against cold temperatures, while orchard heaters worked by heating the air in an orchard. Growers burned a variety of fuels including sawdust, manure, straw, crude oil, coal, and

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[43] G.B. Braket, "Prevention of Frost Injury to Fruit Crops," *Better Fruit* 5, no. 4 (October 1910): 33.

even garbage. One company in California sold pre-fabricated "smudge bags" filled with wood shavings and crude oil.[44] All a grower had to do was place the bags throughout the orchard and light them on fire at the appropriate time. *Better Fruit* also advertised a wide variety of heaters and smudge burners in different shapes and sizes. Experts in *Better Fruit* debated the benefits of smudges versus orchard heaters, but these debates were based less on scientific evidence and more on selling a product. F.A. Huntley, for example, argued that despite claims to the contrary, orchard heaters could not effectively prevent frost. Instead, he believed that growers should purchase his patented smudge pots.[45] In the absence of strong scientific consensus, growers continued to use both smudge pots and orchard heaters, depending on personal preference.

Smudge pots or orchard heaters worked only if growers monitored weather conditions to anticipate frosts. The Weather Bureau disseminated this information throughout the country. In 1910, Edward Wells, director of the Weather Bureau at Boise, Idaho, estimated that the bureau sent telegraph warnings to 6,000 different addresses across the nation, all "within call of two million telephone subscribers." Warnings were also spread by "maps, postal cards, rural free delivery slips, flags, whistles, and the daily press."[46] Farmers, in other words, had no excuses for not following local weather reports. The rapid dissemination of weather reports was important since weather conditions could

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[44] "Methods of Preventing the Effect of Frost," *Better Fruit* 5, no. 4 (October 1910): 43.

[45] F.A. Huntley, "The Prevention of Frost-Injury in Orchards," *Better Fruit* 4, no. 10 (April 1910): 33.

[46] Edward L. Wells, "Relation of Weather Bureau to Horticulture," *Better Fruit* 5, no. 4 (October 1910): 46.

change quickly. In a 1910 study, the USDA emphasized the importance of a reliable rural telephone system for this purpose.[47] In addition to following weather reports, farmers were encouraged to place thermometers throughout their orchards to monitor conditions themselves. One company even sold an "Electric Frost Alarm" that was wired to thermometers in the orchard. If the temperature dropped to dangerous levels, the alarm would sound, alerting the grower to light his smudge pots or orchard heaters.[48] Growers had some success in preventing frost damage, but occasionally, despite growers' best efforts, the severity of the weather damaged trees.

Selecting an apple variety to plant was as important as spraying for pests because each variety had distinct properties that affected its marketability. Traditionally, farmers grew a wide variety of apples for home use. Some apples were preferred for making cider or vinegar, while others were chosen because they were hardy or because they ripened early. Typically, a farmer grew a mix of early and late ripening varieties, thereby providing his household with fresh apples from August through November. Commercial growing required an attention to different qualities such as the adaptability of the tree to local growing conditions, the hardiness of the fruit in transport and storage, and the appearance of the fruit. Ripening time was an important factor, because those who harvested early ripening apples could beat their competitors to the market. For example,

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[47] P.J. O'Gara, *The Protection of Orchards in the Pacific Northwest From Spring Frosts by Means of Fires and Smudges*, United States Department of Agriculture, Farmers' Bulletin No. 401 (Washington, DC: Washington Government Printing Office, 1910), 18.

[48] J.P. Bolton, "Frost Prevention – The Electric Frost Alarm," *Better Fruit* 3, no. 6 (December 1908): 33.

William A. Taylor of the USDA observed that early apples, those that ripened as early as August, could be marketed effectively internationally, especially in Britain, because they were ready before the British crop and after the Australian crop.[49]

The early years of Washington's orchards was a period of experimentation when farmers grew many different varieties of apples because the standard market varieties had not yet been established. In 1912, F.A. Huntley, Washington State Horticultural Commissioner, estimated that well over two hundred varieties of apples were being grown in the state, and of these, approximately fifty varieties of winter apples and ten varieties of summer apples were being grown commercially. At a conference, Huntley advised that twenty commercial varieties were adequate statewide, and that "each locality should perhaps not have over a half dozen varieties of winter apples, and in some localities I am sure the number should he cut down . . . to two or three varieties."[50] Huntley surmised that the proliferation of varieties was due to personal preference and ignorance about local growing conditions, neither of which led to efficient orchards. The success of the industry depended on growing a few varieties to perfection. At the same conference, WSC Professor O.M. Morris called for a study aimed at producing a list of

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[49] From the beginning of the twentieth century, efforts were made to market Pacific Northwest apples internationally as well as domestically. Great Britain was an early recipient of these shipments. In Britain, Washington apples faced competition from the local British crop. Although much of the Australian crop was shipped to Great Britain or her colonies, since Australia is in the southern hemisphere, its growing season complimented that of Washington growers and generally did not provide direct competition. William A. Taylor, "Marketing, Storage and Transportation," *Better Fruit* 2, no. 3 (September 1907): 21.

[50] F.A. Huntley, "Choice Varieties – Peculiar Condition of Soil and Climate," *Better Fruit* 8, no.1 (July 1913): 27.

choice varieties that growers could consult. Morris also complained that many in Washington were growing so-called "old" varieties, that is, apple varieties that were popular in the east. Farmers often ordered nursery stock from catalogs, with little regard for how the trees might perform under local soil and climate conditions. Mail orders from out-of-state nurseries presented farmers with greater varieties of fruit than were available locally, but often these scions were damaged during shipment, carried insects, or were not suited to local soils.[51] Moreover, many of these varieties were ill-suited for commercial purposes, and experts were eager to encourage farmers to raise commercial varieties known to perform well and have good market value.

Farmers planted a wide variety of apples that are relatively unknown today -- with colorful, descriptive names such as Red Astrachan, Blue Pearmain, Gloria Mundi, Rambo, Yellow Bellflower, Yellow Transparent, Waxen, Limber Twig, Seek-No-Further, and Twenty Ounce, among many others. With all these varieties, it is evident that early apple cultivation in Washington was a period of experimentation. Some varieties fell out of favor because of their susceptibility to frost damage. A severe freeze in November, 1896, provided the WSC experiment station with the opportunity to study the impact of weather on orchards in eastern Washington. Their findings revealed that the most damage occurred in areas that were damp, such as river bottoms or recently irrigated plots, because the moisture in the soil and trees created more ice which broke down saplings from within. Apples at higher elevations faired better because of the dryer conditions.

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[51] S.W. Fletcher, *Nursery Stock for Washington Orchards*, Agricultural Experiment Station, Bulletin No. 53 (Pullman, WA: State College of Washington, 1902), 30.

Some varieties resisted cold weather better than others. Yellow Bellflowers, Fall Pippins, Esopus, and Yellow Newtowns were the most delicate and sustained the most damage, while Ben Davis and Jonathans were much hardier and sustained little damage.[52] Cold temperatures and frosts were at times a problem, especially in the spring as trees started to bloom. Although farmers employed smudge pots and other orchard heating devices to prevent damage on cold spring nights, choosing a hardy tree improved a farmer's chance of success.

By the 1910s, several varieties emerged as top choices for a variety of reasons. Trees had to be hardy and rapid producers, such as Ben Davis and Wageners that bore fruit more rapidly than other varieties.[53] Other considerations included appearance, ability to withstand shipping and handling, and a long storage life. Additionally, fruit should not bruise easily or too rot quickly. For these reasons, some of the top varieties recommended by experts were Winesap, Spitzenberg, Yellow Newtown, Rome Beauty, Grimes Golden, Jonathan and Ben Davis, but by the 1930s, this list had been further narrowed to just four principle varieties: Winesap, Delicious, Jonathan, and Rome Beauty.[54]

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[52] J.A. Balmer, *A Report on Damage to Fruit Trees Caused by the Severe Freeze of Nov. 26-27-28, 1896*, Agricultural Experiment Station, Bulletin No. 30 (Pullman, WA: State College of Washington, 1897), 11,19.

[53] S.W. Fletcher, *Planting Orchards in Washington*, Agricultural Experiment Station, Bulletin No. 52 (Pullman, WA: State College of Washington, 1902), 16-17.

[54] E.L. Overholser, "Production and Marketing Problems of Apples in the States of Washington and New York Contrasted," (paper, Thirty-second Annual Meeting of the Washington State Horticultural Association, Yakima, WA, December 7-9, 1936), 90.

For the most part, market conditions determined which varieties would be grown.[55] Apples that were less than "high quality" were not worth a grower's time. In order to recoup growing, packing, and transportation expenses, growers charged prices that were two to three times higher than those of eastern apples. Consumers were unwilling to pay higher prices unless the apples were of superior quality. Not all high quality varieties were suitable. Some, such as the Spitzenberg, were "shy bearers"; they produced few apples, and this meant that the production cost per apple was much higher than more prolific varieties. They were only profitable when growers could obtain exceptionally high prices. Others, such as the Maiden Blush and the Winter Banana, went out of commercial production because their color, a cross between red and yellow, was not popular with consumers.[56] The Ben Davis, a popular early commercial variety, also fell out of favor because, although it produced a thick skin that prevented bruising and held up well during shipping, it lacked flavor and was generally purchased by consumers

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[55] The now ubiquitous Delicious apple was not in wide-spread commercial use in Washington until the 1920s. The Delicious was discovered in 1872 by Iowa farmer Jesse Hiatt, who spent eleven years trying to promote his apple with little success. Finally in 1893, Stark Brothers Nursery in Louisiana, Missouri, started marketing this variety. The popularity of the Delicious was spurred in part by the Stark Brothers' marketing techniques. Free Delicious saplings were routinely included with any order. Of the fruit's potential in Washington, F.A. Huntley wrote in 1913 that the Delicious had not been sufficiently tested in the state's growing districts. "The Delicious is a fairly good apple," he wrote, "but it does lack color." The variety did well in the warmer Yakima and Wenatchee Valleys, but it did not favor cool, heavier soils present in other growing districts. The Delicious possessed qualities that made it attractive to growers: the trees and fruit were sturdy, and the fruit had a pleasing color. David C. Ferree, ed., *A History of Fruit Varieties: The American Pomological Society, One-Hundred and Fifty Years, 1848-1998*, (Yakima, WA: *Good Fruit Grower Magazine*, 1998), 1-2; Huntley, "Choice of Varieties," 42.

[56] Huntley, "Choice of Varieties," 41-43.

only when other varieties were unavailable.[57] "I don't raise Ben Davis apples to eat," remarked one Washington grower, "I raise them to sell . . . and I buy good apples to eat at home."[58]

The need to overcome natural conditions went beyond the orchard. Growers tried to extend the lives of their apples as long as possible, since all apples grown could not possibly be purchased by consumers immediately after harvest. Cold storage allowed growers to keep apples for three to six months, depending on the variety. An apple's quality could not be improved by cold storage, which only slowed natural decay, so growers had to be vigilant in their harvesting methods to ensure the longest storage-life possible.

Two kinds of storage were available: common warehouses, which were insulated but not refrigerated, and cold storage warehouses, which were mechanically cooled. Until the 1920s, most warehouses in the Pacific Northwest were of the common type, which were less expensive to construct. Common storage warehouses ranged in size from small cellars located at individual orchards, to large warehouses owned by growers' cooperatives or fruit shippers, such as the 50-by-180 foot warehouse owned by the Wenatchee Valley Fruit Growers' Association.[59] Large warehouses, which often doubled as packing houses, were located on or near rail lines, and they usually served as temporary storage until apples could be shipped to cold storage facilities in the east.

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[57] Beech, *Apples of New York*, 69.

[58] Huntley, "Choice of Varieties," 41.

[59] Warehouse photograph, *Better Fruit* 1, no. 9 (March 1907): 8.

Preferably, apples need to be kept between 32 and 40 degrees, and it was often difficult to achieve such low and consistent temperatures in common storage warehouses. Much depended on the weather. Cool fall nights and cold winters helped maintain satisfactory temperatures, but warmer weather proved detrimental. To maintain stable temperatures, warehouses were constructed with double walls that were filled with sawdust or straw for added insulation. Many warehouses employed fans and ventilation shafts to circulate air, and some used ice to lower temperatures. While these warehouses were not ideal, they provided crucial temporary storage. Although there are not reliable figures for how much Pacific Northwest fruit was stored in eastern warehouses, there was only enough local storage space for a small portion of the crop. In 1915, Pacific Northwest cold storage warehouses, including Washington, Oregon, and Idaho, had a capacity of about one million boxes. The crop for that season, however, was over seven million boxes, meaning that only 14 percent of the crop could be placed in local cold storage.[60] The rest had to be housed in common warehouses to await shipment to eastern storage facilities.

Ice-cooled warehouses were used in the United States throughout the nineteenth century, but by 1880s, both the meat packing industry and the brewing industry demanded refrigeration that was consistent and easily controlled. Natural ice was used almost exclusively for cooling until the 1890s, but mechanical refrigeration was available in some cities in the 1880s. The first mechanically-cooled warehouse was constructed in Boston in 1881, and it was followed by plants in East St. Louis, Illinois, in 1882,

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[60] H.J. Ramsey, et. al., *The Handling and Storage of Apples in the Pacific Northwest*, United States Department of Agriculture Bulletin No. 587 (Washington, DC: Government Printing Office, 1917), 2.

Baltimore in 1886, and Chicago in 1889.[61] Mechanical refrigeration worked by the basic principle of evaporation. Gas, usually ammonia, was compressed to form a liquid and pumped through a series of pipes. As the liquid changed back into a gas, it absorbed heat from its surroundings to produce a cooling effect. In some plants ammonia was used to chill a salted brine, and the brine was then pumped into pipes throughout the warehouse. In other plants, ammonia was piped directly into the warehouse to chill the air.[62]

The technology necessary for cold storage was widely available by the time the Washington apple industry began to flourish in the 1910s. Apples were stored in cold storage facilities as early as the 1890s, and they were one of the few fruits or vegetables that could remain in long-term cold storage. Eastern growers were the first to make extensive use of these new facilities, and in 1898, an estimated 800,000 barrels of apples were held in cold storage warehouses. Five years later, this number had increased to 2,300,000 barrels.[63] By the 1910s, when significant shipments of Washington apples were placed on the market, cold storage facilities were well established in all major distribution centers, most notably Chicago and New York.

Apples placed in storage were still susceptible to rot. One of the most common problems, known as "apple scald," was caused by premature cell death that caused the apple to turn brown from oxidation. Initially, the cause of scald was a mystery. Some

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[61] Oscar E. Anderson, Jr., *Refrigeration in America: A History of a New Technology and Its Impact* (Princeton, NJ: Princeton University Press, 1953), 92.

[62] Ibid., 51,127.

[63] S.A. Beech, *The Apples of New York*, vol. 1. (Albany, NY: J.B. Lyon Company, 1905), 14.

researchers speculated that it was due to excessive moisture in the soil before the apples were harvested. Eastern and Midwestern growers tended to produce smaller commercial varieties than western growers because larger apples required more water than small apples. Western growers did not have to rely on rain for moisture, and could continue to water their orchards throughout the summer, when non-irrigated orchards tended to be the driest. Eastern growers believed that western apples, grown under irrigation, were inferior and did not store as long, but experiments by Washington State College in the 1920s disproved this theory. The study found that water use in orchards did not have a direct impact on scald, but researchers did conclude that large apples were more susceptible to scald.[64]

As early as 1902, the USDA began to experiment with apples in cold storage. A study published in 1905 found that scald was worse when apples were not immediately placed in cold storage.[65] This finding was confirmed in a 1917 study of apple storage practices in the Pacific Northwest. The study sampled apples from four different growing districts – Hood River and Rogue River, Oregon, and Yakima and Wenatchee, Washington – over a five year period to determine which apples were more susceptible to scald. Half of the sample was placed in cold storage immediately after harvest, while the other half was stored for ten days in a common warehouse before being transferred to

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[64] O.M. Morris, *Studies in Apple Storage*, Agricultural Experiment Station Bulletin No. 193 (Pullman, WA: State College of Washington, 1925), 19, 26.

[65] G. Harold Powell and S.H. Fulton, *The Apple in Cold Storage*, United States Department of Agriculture, Bureau of Plant Industry Bulletin No. 48 (Washington, DC: Government Printing Office, 1905), 29-30.

cold storage. Not surprisingly, the apples immediately placed in cold storage lasted longer, retained their flavor better, and were less susceptible to scald.[66]

Researchers also found that harvesting apples at the proper time effectively reduced scald. Overripe and very immature apples tended to have the most problems with scald, while apples picked when slightly under-ripe fared well. One study found that immature Rome Beauties exhibited 48 percent more scald than apples picked at the proper time.[67] Growers generally harvested apples according to the calendar, regardless of yearly variations in fruit maturity. Researchers urged growers to look beyond their calendars and consider the ripeness and size of their fruit before harvesting.[68] For optimal storage, fruit needed to be full-sized, fully colored, and slightly hard. An apple ripe enough for eating was far too ripe for cold storage.

The same fungal diseases that attacked fruit in the orchard could also impact fruit in storage. Apple scab, a common orchard fungus, could appear after fruit had been placed in storage, and it could be nearly undetectable on fruit at harvest. Fruit that looked perfectly good on the packer's table might not look good after a few months in storage. Two main types of fungi attacked apples in storage. The first was parasitic fungi which could attack and penetrate the skin of healthy apples. The most common form of parasitic fungi in commercial warehouses was Northwest anthracnose. This fungus was characterized by small tan spots that spread rapidly. In later stages of infection, pustules

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[66] Ramsey, *The Handling and Storage of Apple*, 3, 6.

[67] Ibid., 13.

[68] Morris, *Studies in Apple Storage*, 29.

and white spores appeared on the apple's surface. Like apple scab, anthracnose could not be treated after harvest. Researchers experimented with dipping the fruit in copper sulfate, a common fungicide, after harvest, but this did not eliminate the disease. The only cure for parasitic fungi was proper "orchard hygiene." In other words, growers needed to follow a proper orchard spraying schedule that included both fungicides and pesticides.[69]

The second type of fungi were saprophytic – a fungi that affected fruit only if the skin had been broken or injured. Blue mold was the most common saprophytic fungus, and it was easily controlled by proper handling methods. Pickers were told to handle apples with extreme care and to avoid inflicting so much as a fingernail scratch on the fruit.[70] Fruit wrappers were another means for preventing the spread of mold between apples. One study found that wrapped apples had up to 46 percent less rot than apples that had not been wrapped. For western growers, wrappers had the added benefit of protecting fruit from bruising during shipment.[71]

Despite careful attention to pest control, choice of varieties, and storage facilities, up to 50 percent of Washington's crop was deemed unmarketable each year.[72] To maintain a high level of quality, Washington adopted strict grading rules. Fruit that was too small, wormy, misshapen, discolored, or blemished would be thrown on the cull pile.

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[69] Ramsey, *The Handling and Storage of Apple*, 11.

[70] Ibid., 12.

[71] Powell and Fulton, *The Apple in Cold Storage*, 22-23.

[72] J.S. Caldwell, *Evaporation of Apples*, Agricultural Experiment Station, Bulletin No. 131 (Pullman, WA: State College of Washington, 1916), 9.

Disposing of this large amount of fruit every year was a problem, so several calls were made to establish cider making or evaporation plants, which produced dried apples. In theory, the idea of salvaging these culls seemed like a recipe for profit, and many investors proposed schemes for processing fruit. At a 1913 agricultural course offered by Washington State College, an individual named Michener of Portland pitched plans for a new evaporation company using his patented "Everfresh" process. The community which acquired his process would be required to pay $23,000 for the cost of plant construction, but all future profits were to stay with the company. E.F. Benson, a grower who attended the meeting, remained skeptical of the originality and profitability of this process. "His description of it sounded exactly like a description of a 'dehydrating' process," wrote Benson, "But his method of promotion appears to be the rankest graft or rather the most ridiculous proposition that I ever heard of."[73] When Benson pointed out that plants in Watsonville, California, paid growers $5 per ton for fruit, Michener promised growers $6 to $10 per ton, and he claimed that the company would still turn a profit. Despite Benson's reservations, most farmers in the audience were impressed by Michener's proposal.

Michener's plan illustrates several key problems that prevented fruit processing from becoming a viable industry. First, the cost of constructing plants was expensive. Second, the amount of culls varied from year to year, so plants could not be assured a steady supply. Third, plants often could not pay enough to make it worth a farmer's time and effort; five dollars a ton was not much money, considering the expense of picking

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[73] E.F. Benson to Thomas Cooper, February 26, 1913, Northern Pacific President's Files, Box 137.E.19.5B, Minnesota Historical Society.

and hauling poor quality fruit. Finally, processed fruit products faced the same marketing hurdles as fresh fruit: distance from markets, high transportation costs, and competition from other regions. In addition to evaporation plants, there were numerous canneries in Washington that did brisk business in peaches, pears, prunes, and berries, in part because these fruits could not be stored as long as apples. Growers quickly saturated local fresh markets and had to find an alternative for selling their fruit. Fresh loganberries, for example, could not be shipped far without being damaged, but canned loganberries became popular with consumers. Some canneries handled apples, but canneries, like growers, tried to produce a high quality product that could compete on the market. As one Yakima cannery proclaimed, "the dry yard is the only place for culls."[74]

For apple growers, marketing fresh apples offered the highest profit. This forced growers to consider carefully all aspects of fruit growing, from choosing nursery stock to spraying for pests. Only the most perfect apples brought a profit, but the grower could rely upon the advice of university trained experts, modernized farm equipment, and scientifically tested pesticides. In her book, *Every Farm a Factory*, historian Deborah Fitzgerald argues that the processes of mechanization, specialization, and scientific and technological advancement should be considered an industrial process.[75] These forces cannot be treated separately or in isolation, she argues, because they all occurred within a social and economic framework that complimented one another. Whether commentators

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[74] "The Dry Yard is the Only Place for Culls," *Better Fruit* 3, no. 5 (November 1908): 28.

[75] Deborah Fitzgerald, *Every Farm a Factory: The Industrial Idea in American Agriculture* (New Haven, CT: Yale University Press, 2003), 5.

and critics realized it or not, by the early twentieth century, agriculture had been set on a path toward industrialization, and it was clear that the western fruit industry required a standardized, high-quality product that could be sold profitably in distant markets.

Without scientific innovations such as new pesticides and fruit breeds, the markets farmers relied upon would be compromised. Fitzgerald has identified five factors that characterize successful factories: "large-scale production, specialized machines, standardization of processes and products, reliance on managerial expertise, and a continual evocation of 'efficiency' as a product mandate."[76] By the 1910s, all of these factors had converged on the orchards in Washington state, compelling farmers to embrace standardized and proven varieties on a large scale. These varieties were chosen for their marketable characteristics: their consistency of production, appearance, and hardiness in transport. Standardization and production levels were enhanced by chemical spray applications, and agricultural agents on the federal, state, and local level, college trained experts, scientists, and horticultural organizations provided the managerial expertise and methods that enabled farmers to increase their efficiency. While orchards remained small, fifteen to twenty acres on average, and resembled the Jeffersonian yeoman farmer ideal, orchardists were required to become part of a larger, cooperative-industrial framework if they hoped to succeed.

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[76] Ibid., 23.

Chapter 4

"Handle the apples as though they were eggs": Establishing Transcontinental Markets, 1910-1929

> Trying to raise apples in the northwest and market them in the east is like trying to dig a well on the top of a mountain.
>
> - Harold H. Maynard

> We have fought vermin and the disease, and graded and packed our fruit in scientific and attractive packages. But after we have "delivered the goods" we often find ourselves up against a primitive, unscientific and barbaric method of marketing the stuff and distributing it, whereby the consumer pays too much and the producer gets too little for his work.
>
> - H.V. Rominger

While growers in the Pacific Northwest struggled to overcome the challenges associated with land settlement, irrigation, pest control, and orchard maintenance, perhaps the greatest obstacle that lay in the way of developing profitable orchards was the distance from consumer markets. After all, what good does it do to spend the time and money growing the perfect apple if there is no one to buy and eat it? Initially, growers, agricultural colleges, and the USDA considered horticultural issues to be their primary focus. Farmers were not supposed to be businessmen; farms were places that businessmen went to recuperate from their stress of public life. If the booster literature was to be believed, the farm was a place where a man could live out the true American dream of independence and self-sufficiency. While some growers clung to the idyllic

image of farm life, the reality was that growers could not successfully battle the market forces of the early twentieth century alone. Individualized marketing worked for farmers who loaded their goods onto their wagons and sold them to consumers in the nearest town. In the Northwest, however, this model could not be replicated because farmers could not establish direct contact with their primary consumers who were 3,000 miles away. Instead, growers had to contend with middlemen – bankers, railroad officials, and "commission men" who purchased fruit wholesale – of whom they were often highly skeptical. They also had to contend with routine market gluts, the inevitable losses associated with shipping their perishable product long distances, and competition from eastern fruit grown with fewer overhead costs. As orchard production in Washington increased during the first decade of the twentieth century, these problems did not resolve themselves. Rather, they became more pronounced, and growers were forced to seek solutions by forming cooperative organizations to ensure the continued success of their farms.

By the 1910s, growers, the railroads, and agricultural experts agreed that the apple industry was in serious crisis. The initial success of Washington's orchards had encouraged settlement and production, for by 1895, Washington had produced its first million bushel crop. By 1906, output was 3 million bushels, and in 1910, 5.8 million bushels. By 1911 and 1912, all involved with the apple industry projected large increases as several thousand acres of newly planted land came into production. In these years, growers found it difficult to sell their apples, and railroads had trouble keeping up with demand for refrigerated railcars. If actions were not taken, experts predicted that increased production would cause the situation to deteriorate. As production swelled to

17 million bushels of apples in 1916 and 25 million bushels in 1921, the question of how to transport, store, and market all of this fruit had become a very pressing question indeed.[1]

During the Progressive Era, systems of food supply and distribution began to change. Throughout most of the nineteenth century, American homes were supplied with fruit grown in private orchards. In 1900, many Americans still lived in rural areas that could be supplied on a small scale through decentralized, local distributors on a seasonal basis. The growth of urban areas and the development of irrigated fruit tracks in the West began to change the informal distribution systems that existed at the turn of the century. California, Oregon, and Washington had prime agricultural land, well suited for growing a variety of fruit including apples, peaches, pears, cherries, plums, and others, and these states needed a market for their goods if the fruit industry was to survive. As urban populations increased, fewer people had the ability to grow their own food, and western fruit was an expensive luxury that few urban families could afford.

Although western fruit was expensive, fruit was not in short supply. Major commercial orchards existed in New York, and most localities were supplied by regional fruit producers. Local farmers who were not part of a larger commercial machine sold fruit to supplement their incomes. Growers in the east had much lower transportation costs than western growers, and since their fruit usually traveled less than a few hundred

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[1] According to Overholser, the peak year of apple production was in 1930, when 37.85 million bushels of apples were produced. E. L. Overholser, "Production and Marketing Problems of Apples in the State of New York and Washington Contrasted," (paper, Thirty-second Annual Meeting of the Washington Horticultural Society, Yakima, Washington, December 7-9, 1936), 87.

miles, they simply dumped the fruit into large wooden barrels for shipment. Western fruit, on the other hand, was a luxury good, shipped thousands of miles, and growers required higher prices to recoup shipping costs. Early on growers learned that their fruit needed a competitive edge over eastern fruit in order to justify higher prices. Fruit had to be attractive, both in appearance and packaging. Only the highest quality fruit could justify the high cost of transportation and garner sufficient profit. Through market research, the adoption of strict quality control standards, the formation of cooperative associations, and aggressive marketing tactics, Washington growers managed to establish successful market connections. By the 1920s, Washington had overtaken New York as the leading apple producing state in the nation.

Very little is known about apple shipments in the late 1800s. The commercial apple industry was still in its infancy, and neither states nor the U.S. Department of Agriculture kept statistics on individual fruit types or destinations. In the late 1890s, Professor William B. Allwood of the Virginia Agricultural Experiment Station recognized the need for data and asked railroad shipping agents to keep track of the carloads that passed through their stations. Despite the assistance of these agents, information remained patchy until the USDA started keeping statistics in the early 1900s. In that year, the USDA reported that Washington "claims to have shipped 1,000 cars of apples this year"; however, they had collected no real data to support this claim and had to rely upon reports from growers within the state.[2] Local newspapers in places such as

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[2] Dummeier was skeptical of these figures. Had growers in Washington, Oregon, and Idaho shipped all the apples they grew in 1899, it would have amounted to less than 2,000 railcars. By contrast, in 1923 these states shipped over 60,000 carloads of apples.

Wenatchee and Yakima reported on prominent fruit shipments and the departure of fruit for the eastern markets, especially in 1910 and 1912 when the number of shipped carloads began to increase substantially. During the peak of the 1912 season, the *Yakima Republic* reported an average of 10-20 cars per day leaving Yakima for points east. Figures compiled by Wenatchee historian John Gellatly and geographer Otis Freeman provide a rough estimate of the growth of the industry in that district. Yakima's growth would have followed a similar trajectory.

Transporting ever increasing amounts of fruit to eastern consumers was marketers' first concern. Without reliable rail transportation and refrigerated boxcars, the Northwest fruit industry would never have grown to such large proportions. "The refrigerated railroad car," wrote historian William Cronon, "was a simple piece of technology with extraordinarily far-reaching consequences."[3] Refrigerated cars made it possible to ship large quantities of perishable goods over long distances, which changed Americans' diets because consumers were no longer limited to local produce in season. "The refrigerated car formed a link between the farm and the market place," railroad historian John White has explained. "It became a part of a long standing union between agriculture and transportation."[4] Many of the nation's most productive agricultural areas were in the West and the South, hundreds and even thousands of miles from urban

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Edwin F. Dummeier, "The Marketing of Pacific Coast Fruits in Chicago" (PhD diss., University of Chicago, 1926), 17-19.

[3] William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W. W. Norton & Company, 1991), 234.

[4] John H. White, *The Great Yellow Fleet: A History of American Railroad Refrigerator Cars* (San Marino, CA: Golden West Books, 1986), 11.

TABLE 1 -- NUMBER OF APPLE CARS SHIPPED FROM WENATCHEE, 1902 – 1930

Crop Year	Number of Cars,[5] Estimated	Crop Year	Number of Cars, Estimated
1902	2	1916	7,281
1903	116	1917	7,646
1904	587	1918	8,366
1905	632	1919	12,148
1906	603	1920	9,470
1907	616	1921	14,121
1908	900	1922	13,845
1909	747	1923	17,836
1910	2,428	1924	12,643
1911	2,000	1925	16,003
1912	3,990	1926	16,843
1913	4,107	1927	15,075
1914	6,386	1928	20,707
1915	4,846	1930	24,186

[5] To figure the number of apples for a given year, multiply the number of apples per box (usually 100) by the number of boxes in a car (approximately 630). For example, approximately 126 million apples were shipped in 1911. Table from John A. Gellatly, *History of Wenatchee: The Apple Capital of the World* (Wenatchee, WA: Wenatchee Bindery and Printing Co., 1958), 127-128. Figures for 1902-1906 and 1915 from Otis W. Freeman, "Apple Industry of the Wenatchee Area," *Economic Geography* 10 (1934): 170. Freeman's figures on carloads vary from Gellatly's figures by 100-200 car loads per year.

markets in the Northeast. The development of the refrigerated car made it possible to produce perishable food goods and then to ship them thousands of miles to urban market centers.

The idea of refrigerating rail shipments was not new. As early as the 1840s, cargoes had been transported with ice, and by the 1860s the basic refrigerated car design, known as block construction, had been designed and put into use. Bunkers on each end of a railcar held blocks of ice, and cargo was stowed in the center of the car. In 1869, the year the first transcontinental railroad was completed, a carload of fruit was shipped from California to New York, but with poor results. The next year another shipment of fruit was successfully transported from California to New York.[6] During the 1870s, the shipment of fruit, meat, and dairy products in refrigerated railcars grew. Private companies took the first initiative in making these cars popular with Gustav Swift, a Chicago meat packer, being one of the first to experiment with the large-scale shipment of dressed beef to eastern markets. Having experienced many losses when trying to haul live animals, Swift experimented with shipping dressed animals. At first, carcasses were shipped during the winter months in ventilated cars; the cold winter air kept the beef frozen. Swift later developed a refrigerated car that employed both ventilation and block construction. This design provided even temperature control so that all parts of the railcar were cooled equally.[7]

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[6] Anthony W. Thompson, Robert J. Church, and Bruce H. Jones, *Pacific Fruit Express: The World's Largest Refrigerator Car Company* (Wilton, CA: Central Valley Railroad Publications, 1992), 57.

[7] Ibid., 57, 61; Cronon, *Nature's Metropolis*, 233-234.

Railroad companies were reluctant to invest in refrigerated cars until the 1880s. Perishable shipments such as fruit were generally seasonal in nature, and railroads were slow to invest a great deal of money in equipment that was only going to be used a few months a year. Meat and dairy products, however, were shipped year-round. The success of privately owned railcars, such as those of Swift, finally prompted railroads to invest in railcars of their own. In 1880, railroad companies owned only 310 refrigerated railcars, while private companies owned over 1,000 cars.[8] These cars -- which were called baggage, express, or passenger fruit cars -- were attached to passenger trains and carried fruit to eastern destinations on passenger train schedules. This high-speed service allowed fruit to be transported from coast-to-coast in about fifty hours.[9]

In the early years of the apple industry, the cars which carried Washington apples to Northwest markets, such as Seattle and Portland, were not refrigerated. For transportation over these short distances, the railroads used standard boxcars with added ventilation. Refrigerated express cars were reserved for shipments east. Ventilated boxcars helped keep fruit cool, but they could not keep apples at the desired temperature of 40 degrees for the duration of a transcontinental journey. Engineers experimented with several different designs for ice-cooled rail cars. By 1910, railroads had adopted a standard refrigerated car design that included tight fitting doors, insulated walls, large ice bunkers at each end of the car, and mechanical fans powered by the car's axel that

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[8] White, *The Great Yellow Fleet*, 12, 16-17. Private companies owned a majority of refrigerated railcars until the mid-1970s. However, by the 1920s the majority of these private companies had been purchased by the railroads and turned into subsidiary corporations.

[9] Thompson, *Pacific Fruit Express*, 60-61.

circulated air while the car was in motion. Because of these modifications, refrigerated cars cost about twice as much as ordinary boxcars, but the development of this technology made commercial shipments of fruit possible.[10] California sent its first refrigerated car of fruit, a carload of cherries and apricots, to eastern markets in 1888, and Washington began to ship its first carloads of fruit east about a decade later.[11]

As the apple industry grew, express cars alone could not provide the service necessary to transport large crops. Not only was the Northwest apple crop growing, but fruit and vegetable growers across the West were increasing their output, putting additional pressure on the small fleets of refrigerated cars owned by the railroads.[12] As the thousands of trees planted in Yakima and Wenatchee began bearing in the 1910s, the availability of refrigerated cars became a large concern for railroad companies. In 1915, the Northern Pacific, which serviced the Yakima Valley, owned 3,600 refrigerated cars, and it estimated, based on the next season's projected crop, that the railroad would need

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[10] Mechanically refrigerated railcars did not come into use until the mid-1950s. Iced refrigerated cars were not completely phased out until the 1970s. Marc A. Entze, "The Importance of the Refrigerated Rail Car to Pacific Northwest Agriculture" (paper, Pacific Northwest History Conference, Tacoma, WA, April 20, 2007).

[11] Warren P. Tufts, "The Rich Pattern of California Crops," in Claude B. Hutchinson, *California Agriculture* (Berkeley: University of California Press, 1946), 158.

[12] The number of cars originated by all rail carriers in the country grew from 4,582,537 in 1899 to 19,726,069 in 1919, a 437 percent increase in traffic. These numbers do not provide a clear correlation to the increased use of refrigerated cars because they include not only all fresh fruits and vegetables, but also dried and canned products. However, these figures are indicative of the tremendous growth of the fruit and vegetable industries in the first decades of the twentieth century. Dummeier, "The Marketing of Pacific Coast Fruits in Chicago," 11.

an additional "4,000 cars, if the refrigerators make only one trip."[13] The previous record year for the Yakima apple crop was 1914, in which 6,500 carloads had been shipped. By contrast, the Northern Pacific estimated between 8,000 and 10,000 carloads for the 1916 season. Despite these early setbacks, the use of refrigerated cars mushroomed across the nation, and by 1910 over 100,000 cars were in use, compared to just over 68,000 cars in 1900.[14] Rather than connecting fruit express cars to passenger trains, the railroads began to operate what were known as "fruit blocks," or trains comprised exclusively of fruit cars.

While transportation was the most important marketing concern, the next most important factor in increasing sales was improving packing and grading standards. In the early days, apples were not washed or in any other way prepared for market, and John Gellatly, local Wenatchee historian and early resident, offered this perspective on the condition of these early apples:

> one can easily visualize how the fruit must have looked, for in those days there were no oiled roads, and obviously the flying dust, plus the stain of the spray material made the fruit look very unappetizing – still it sold like hotcakes.[15]

While the sale of this dusty, tired fruit did much to boost the hopes of growers in central Washington, shipping fruit in this condition did not encourage consumption.

The western fruit industry was growing at a time of great change in the United States. Progressive reformers were concerned with sanitation and food safety; Upton Sinclair's

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[13] W.P. Kenney to J.M. Gruber, December 18, 1915, Northern Pacific President's Files, Box 132.F.13.2F, Minnesota Historial Society.

[14] White, *The Great Yellow Fleet*, 12.

[15] Gellatly, *History of Wenatchee*, 137.

shocking expose of the meat packing industry prompted the passage of the Pure Food and Drug Act in 1906. Other food manufactures were also concerned with cleanliness and the public's health. H.J. Heinz, for example, gave tours of his famous sauce factory, and all of his workers were clad in white to demonstrate the purity of the factory and the product.[16] Consumers came to expect a high standard of quality from all of their food.

From the outset, it paid only to ship the highest quality fruit. As one expert explained to Northern Pacific Railway officials, "the Northwestern districts that cannot grow fine apples had better quit the apple business right away, they have no chance whatever."[17] To maintain quality and the reputation of Washington apples, growers attempted to establish strict grading systems to ensure a uniform quality in their fruit. In the early years, each shipper or cooperative had its own grading standards. By the 1910s, three grades had been adopted: extra fancy, fancy, and "C" grade. According to grades adopted by the North Pacific Fruit Distributors in 1914, Extra Fancy apples had to be "smooth, matured, clean, hand-picked, well-formed apples only; free from all insect pests, disease, blemishes, bruises and other physical injuries." Fancy grades varied only in that some small blemishes such as scratches were allowed, as long as the blemishes were small, while "C" grades could be "slightly misshapen" with "slight sunscald" and have no more than two pest-inflicted blemishes. Grading rules also dictated minimum

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[16] Harvey Levenstein, *Revolution at the Table: The Transformation of the American Diet* (Berkeley: University of California Press, 2003), 39-41.

[17] Interview with J.C. Crutchfield, December 20, 1912, Northern Pacific President's file, Box 137 E. 19.5B, Minnesota Historical Society.

sizes for each variety grown.[18] Some variations remained in the definition of these grades until the early 1920s, when state law mandated a yearly "State Grade and Pack Conference" where growers reviewed statewide grading standards.[19]

Not only did fruit have to meet certain standards, all aspects of packaging were also regulated. In order to ship fruit several thousand miles successfully and have it arrive intact, growers had to improve their methods of packing. Traditionally, apples had been packed in barrels, and this worked well in eastern states, where apples only had to travel a few hundred miles at most to reach market. Costs of transportation for eastern growers were considerably lower than for their western counterparts. Barrel-packed apples that arrived bruised or otherwise damaged could be written off as part of the expense of doing business. Western growers, however, could not afford such losses, especially because they were banking on the high quality of their apples to increase sales. If consumers were going to pay more for western apples, they wanted apples that were pristine and free from rot, bruising, and blemishes. Clearly, barrels were not up to this task. Again, California growers pioneered the use of new packing methods by developing smaller fruit boxes as early as 1885.[20] Following California's example, growers in Oregon and Washington

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[18] "Grade Rules for North Pacific Fruit Distributors, Season 1914," *Better Fruit* 9, no. 2 (August 1914): 11, 29. Apples were sized-based on the number that would fit in a standard Northwest box which measured 10 1/2 by 11 1/2 by 18 inches. For example, size 88 apples were larger than size 175.

[19] Harold H. Maynard, *Marketing Northwest Apples* (New York: The Ronald Press Company, 1923), 80-81.

[20] Fruit boxes came in many different sizes depending on the fruit district. Despite the size variations, the boxes had approximately the same volume. Three western boxes were the equivalent of one eastern barrel. The Watsonville District in Northern California

adopted fruit boxes and established standard packing configurations. *Better Fruit* carried diagrams of packing arrangements for different sized fruit. Straight packs, where apples were packed in parallel rows, were discouraged because the apples put too much pressure on each other. The diagonal or diamond pack, where fruit was packed in diagonal rows, gave fruit more room to move. The type of packing depended on the grade of apples being packed, with the most elaborate packing methods saved for special apples reserved for fairs, demonstrations, or high profile customers.[21] By the 1910s, several growing regions started "packing schools" to train workers in the proper methods of packing and handling apples.

In a foreshadowing of brand development that would come later, apples were individually wrapped in white paper and stamped with the names of the grower and packer. This served two purposes. First, it created consumer confidence. Eastern fruit wholesalers and consumers could develop a trusting relationship with growers and know that a consistent quality would be maintained. Second, it helped police the fruit industry. Poorly packed or low quality fruit could be traced back to its source. In the case of cooperatives, packers or growers were excluded from the organization for failing to meet quality control standards.

Initially, packing and grading methods varied from district to district. *Better Fruit* offered picking and packing advice to growers based on information from agricultural

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is generally credited with introducing the first box which measured 9 3/4 by 11 by 20 1/4 inches. In 1915 the "Northwest Standard" box, measuring 10 1/2 by 11 1/2 by 18 inches was officially adopted in California. Tufts, "The Rich Pattern of California Crops," 180.

[21] "Shipping the Apple – From Orchard to Market," *Better Fruit* 2, no. 3 (September 1907): 5-13.

research stations and the experience of growers. C.I. Lewis, horticulturalist at Oregon State College, advised growers to "handle the apples as though they were eggs," never dumping them in piles or dropping them into deep picking bags. Growers used specially constructed packing benches – burlap covered tables with lips to prevent fruit from rolling off – and grading boards with holes bored to the exact dimensions of the various apple grades. By the 1910s, growers, especially large packing cooperatives, began to adopt mechanized sorting tables that passed apples over a series of holes. Small apples would fall through the holes, leaving the larger fruit behind.

Despite the initial variation and packing styles and grading standards, Washington growers were packing their apples with more care than eastern growers. Eastern growers were also instructed to "handle the apples at though they were eggs," but the similarities ended there. In a manual on apple culture, Liberty Hyde Bailey, a leading horticulturalist at Cornell University, advised growers to pack apples in clean barrels. After carefully placing two or three layers of apples on the bottom of the barrel, a process known as "facing," apples were poured into the barrels. The barrels were then shaken to make sure the fruit was packed in as tightly as possible. "It is better to jam these apples severely," wrote Bailey, "than to allow those in the interior to rattle." Whereas Washington growers attempted to eliminate all bruising and damage in shipment, eastern growers assumed there would be considerable bruising, especially on the top layer of apples. Bailey brushed off this damage and stated that "no harm would result" because the barrel lid, made of soft wood, would absorb any juice created by bruising. Bailey also recommended sorting the apples. Unlike Washington growers, who provided detailed grading instructions based on size, coloration, and insect damage, eastern growers

separated their apples into two classes. First class apples were ripe, while second class apples were over-ripe or wormy. No further distinction was given.[22]

By the 1920s, two main types of packing arrangements predominated in Washington. First were the large, centralized packing houses owned and operated by associations, such as the Wenatchee-Okanogan Cooperative Federation and the Yakima Horticultural Union, or large cash buyers, such as Conrad Rose of Wenatchee. These were generally located near railroad tracks for ease of loading, and each served hundreds of growers. Second were the small, decentralized packing houses located in individual orchards. The advantage of decentralized packing was that growers were able to maintain direct control over their fruit and avoid paying packing fees to a third party. The down side was that small packing houses were less efficient. They did not make use of large machinery, they could not rely on economies of scale for packing materials, and they often had difficulty obtaining labor. It might take only a few days to pack the fruit of an individual orchard, while large packing houses could employ a person for several months. Although many growers resisted cooperative efforts, in the long term, it was cheaper to use a large packing house because packing supplies were purchased in bulk, and apples were packed in assembly line fashion. Individual growers could not achieve the same level of standardization as the large packing houses.[23]

Available transportation and attractive packaging were not enough to guarantee success. Fruit was still not selling in the volume and for the prices that fruit growers had

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[22] Liberty Hyde Bailey, *Field Notes on Apple Culture* (New York: Orange Judd Company, 1911), 60-62.

[23] Maynard, *Marketing Northwest Apples*, 18, 21.

hoped. Growers blamed the railroads for charging high rates that cut in to their profits and the sales agents who handled their fruit.[24] The railroads and sales agents laid the blame on growers' suspicion of outsiders and their lack of efficiency in organizing themselves to lower production costs and establish more stable markets for their goods. James S. Crutchfield, a Pittsburgh commission man and president of Crutchfield, Woolfolk & Gibson, explained what he considered to be the largest problems with growers in an interview with top Northern Pacific officials:

> They count everybody a middleman. If the merchant can get along without customers, then they can get along without the middleman and if they can deliver the goods direct to the consumer, then they do not need any middlemen, but that is just as impossible as it is for them to carry their products to market in automobiles, or without the railroads, for instance.[25]

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[24] Growers continually complained about the high freight rates charged by the railroads and filed petitions with the Interstate Commerce Commission. The ICC was founded in 1887 to regulate commerce, specifically monopolistic and discriminatory railroad rates. However, the ICC lacked the power to enforce fair rates until the passage of the Elkins Act of 1903 which outlined punishments for discriminatory pricing, and the Hepburn Act of 1906 which allowed the ICC to set maximum freight rates. After 1906, any changes to freight rates had to be approved by the ICC. In response to complaints filed by Washington growers, the ICC permitted some minor changes in freight rates, but it generally held to the rates established by the railroads. Theodore E. Keeler, *Railroads, Freight, and Public Policy* (Washington, DC: The Brookings Institution, 1983), 22-23; John Fahey, *The Inland Empire: Unfolding Years, 1879-1929* (Seattle: University of Washington Press, 1986), 120-121.

[25] Interview with James S. Crutchfield, December 20, 1912, Northern Pacific President's file, Box 137 E. 19.5B, Minnesota Historical Society.

Crutchfield had long standing ties with the Pacific Northwest dating back to 1903, when he first traveled to Wenatchee to purchase apples. He understood that growers were in an unenviable position and that they had no choice but to trust these middlemen. But there were major flaws with the marketing and distribution systems in place at the time. Many growers had been so focused on perfecting their orchards to produce the perfect apple, that they neglected to think through how to sell that apple to willing customers. It was as if some growers thought that if the apples were neatly packed and loaded on to rail cars, they would take care of themselves.

As more orchards came into production, it became more difficult for growers to get the prices they wanted. Washington produced its first million bushel crop in 1895. By 1898 the state had produced two million bushels. In 1906 it cracked the three million bushel mark with several thousand acres of apples poised to come into production within the next five years.[26] While crop failures in New York in the 1880s and 1890s contributed to the initial market success of Washington apples, by the 1910s, growers could no longer expect that all fruit shipped east would be purchased. Fresh fruit and vegetables were in general becoming more readily available, as evidenced by the four-fold increase in refrigerated car traffic between 1899 and 1919, and consumers were purchasing more of these items. Increased shipments, however, also meant stronger competition, not only from eastern fruit, but from other western fruit as well. Commission agents from the east had their pick of orchards, and they used the growers' ignorance of the general market conditions to drive prices lower.

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[26] Overholser, "Production and Marketing Problems," 87.

There were a number of methods by which a grower could place his fruit on the market. First, a grower could find a cash buyer who would pay cash up front for fruit at the time of harvest. Some cash buyers were local businessmen who owned their own warehouses and assembled carloads of fruit or vegetables to sell to established business partners in the east. Cash buyers also came from eastern cities to purchase apples directly. The problem with non-local cash buyers was that they tended to be inconsistent. If the eastern crop had a good year, these buyers had no reason to make the long trek to the Northwest, much to the chagrin of Washington growers. The advantage of using a cash buyer was that growers could avoid speculation and receive the profits from their crops as early as October or November, immediately after harvest. Growers sometimes received cash advances on their crops in June or July, essentially mortgaging the crops to buyers.[27] On occasion, growers lost their profits by selling to shady buyers who took their apples without paying for them, but the major drawback to this system was that growers often received lower prices by selling at the peak of harvest rather than waiting until later in the season when demand might be higher.[28]

The second method for selling fruit was through consignment houses. These eastern fruit houses, located in cities such as Chicago and New York, acted as a conduit between growers and eastern consumers. Consignment houses held fruit in storage to be

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[27] This is similar to the system of crop mortgaging that developed in the South. However, unlike sharecroppers, Washington growers had more leverage because of the often strong competition between buyers. If they were not happy with the advance offered by a particular cash buyer, they could usually find another outlet for their fruit. Maynard, *Marketing Northwest Apples*, 28.

[28] Ibid., 24-27.

sold when the market seemed most favorable. Growers were forwarded funds for freight, icing, and warehouse fees, and these fees, as well as a sales commission of 10 to 15 percent, were deducted from the final sale price. In addition, growers were also advanced money early in the season for spraying and packing supplies. Commission houses used their wide knowledge of market conditions and their well established ties with fruit wholesalers to arrange for distribution.[29] Advertisements for these houses are featured prominently in many issues of *Better Fruit*, and they often cite their extensive network of connections in eastern markets, their expert knowledge of the fruit markets, and their past successes in disposing of fruit.

The advantage and disadvantage of these commission houses was that growers could speculate on the market. This did not always turn out in the growers' favor. Once the consignment house took possession of the fruit, the grower no longer had control. Many consignment houses were honest establishments that worked to develop strong relationships with growers, but there were swindlers. At times, commission agents would claim fruit was damaged and that it could only be sold for a low price -- when in fact it could have sold higher. *Better Fruit* offered warnings against dishonest agents, and later those who favored the formation of grower operated cooperatives used this argument to their advantage. W.T. Clark of Wenatchee, who was involved with early cooperatives, corresponded at length with Great Northern Railway officials and sent them a prospectus of his proposed cooperative. The railroad was generally sympathetic to Clark's arguments; L.C. Gilman, assistant to the president, wrote that "There is no doubt of the

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[29] Ibid., 30-31.

fact that if the fruit growers are in a position where they are compelled to market their product through commission houses it will be but a very short time before they will be absolutely at the mercy of these middlemen."[30] It is difficult to know how many dishonest commission houses there actually were. In an article in *Better Fruit*, Oregon State College horticulturalist C.I. Lewis speculated that some problems with commission houses were the growers' fault.[31] Fruit was not always packed or graded properly, and growers were not onsite to see the true condition of their fruit or the markets. Commission houses could make honest mistakes as well. Regardless, in 1907 Washington passed a law that required commission merchants to obtain licenses in order to work in the state and limited the amount of their commissions.[32] Despite these concerns, commission houses remained popular through the early twentieth century.

Commission houses were critical to the market development of the industry. Several of these companies established long-term relationships with Washington growers, and they successfully used their business connections to open new markets. James S. Crutchfield, a commission man from Pittsburgh, Pennsylvania was one of the most diligent promoters of Washington apples. He first traveled to Wenatchee in 1903 to purchase fruit. Eventually, his company, Crutchfield, Woolfolk & Gibson, hired local

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[30] L.C. Gilman to Louis Hill, November 3, 1911, Great Northern President's Subject Files, Box 132.E.17.9B, Minnesota Historical Society

[31] C.I. Lewis, "Shipping the Apple – From Orchard to Market," *Better Fruit* 2, no. 3 (September 1907): 11.

[32] "New Commission Law is Strongly Opposed," *Better Fruit* 2, no. 3 (September 1907): 24-25; "Enforcement of Law Aided by the Farmer," *Better Fruit* 2, no. 5 (November 1907): 28-29.

commission agents and opened sales offices in Portland and Seattle. At least two of Crutchfield's agents, W.F. Gwin and A.Z. Wells, later left the company to form successful commission houses of their own. Crutchfield advocated the production of "quality fruit produced by careful growing and quick harvest, rapid transportation, and cold-storage,"[33] and he worked to sell his marketing vision to all involved with the apple industry. In 1912, as markets were glutted and the industry seemed to be in crisis, Crutchfield was interviewed by Howard Elliott, president of the Northern Pacific. Crutchfield argued that "the Northwestern districts that cannot grow fine apples had better quit the apple business right away, they have no chance whatever."[34] As predicted, overproduction in the 1910s forced many marginal areas out of production. Crutchfield also complained that growers had no concept of how markets were supposed to work. Unlike banana and citrus growers, apple growers lacked organized distribution networks and market connections with wholesalers that would enable them to move their fruit in a timely fashion.

Crutchfield was not the only person to recognize the deep flaws of Washington's marketing system. As growers began to examine marketing strategies, a third option developed: the growers' cooperative. Very early in the development of the industry, some growers realized that cooperative associations could provide a solution for storage, shipping, and marketing. The Northwest Fruit Growers Association, formed in 1894, had encouraged the formation of cooperatives through its publication *Better Fruit*, which

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[33] Fahey, *The Inland Empire*, 112-113.

[34] Interview with James S. Crutchfield, December 20, 1912, Northern Pacific President's file, Box 137 E. 19.5B, Minnesota Historical Society.

started in 1906, and was for several years the main forum for growers throughout the Northwest. In addition to articles from horticulturalists, entomologists, state colleges, and the USDA, which represented the most up-to-date information on scientific aspects of fruit production, *Better Fruit* also featured extensive information on picking, packing, sorting, and storage methods. It also ran articles and editorials from average growers who shared advice with their peers, and it published the proceedings of major growers' meetings across the region.

In its first issue, *Better Fruit* featured an article by W.H. Paulhamus, president of the Puyallup and Sumner Fruit Growers Association in Washington, extolling the "importance of fruit growers associations." Paulhamus argued that good soil, ideal climate, and hard work were not enough to ensure the success of the industry. "Any person with a good common sense and a reasonable amount of energy can produce a most excellent crop," he wrote. None of this mattered, however, if "the industry is a dead one."[35] While many growers and experts focused on improving the quality and output of orchards, others realized that this would not be enough to create a viable industry. Fruit shipped out of the region required willing markets to absorb it. Paulhamus estimated that the actual production of fruit only accounted for one-third of the business; the rest of a growers energy should be focused on marketing.

Growers in the Northwest did not originate the idea of cooperatives. California had faced the same problems and had provided growers with an example of how an efficient association could benefit farmers. Paulhamus had great faith in the ability of

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[35] W.H. Paulhamus, "Importance of Fruit Growers Associations," *Better Fruit* 1, no. 1 (July 1906): 3-4.

Northwest growers to produce fruit that was far superior to that grown in California, outside of citrus of course. In order to take advantage of the region's full potential, it was necessary to look to the example set by California, whose success came from marketing outside state borders. This was accomplished through the cooperation of growers who could assist each other with packing and shipping. Associations could provide inspectors to make sure only quality fruit was included in shipments and to guarantee that growers complied with standard fruit grades. In addition, they could bring growers larger profits by decreasing competition and opening larger markets.

California was the first western state to develop cooperatives to market fruit. While commercial orchards had existed in the state since the 1840s, the citrus industry took off in the 1870s after the arrival of the Southern Pacific Railroad. The first carload of citrus was shipped east from Los Angeles, a year after the Southern Pacific had completed its central line.[36] By the 1890s, after the initial planting boom had subsided, 4.5 million orange trees and 1.3 million lemon trees had been planted in California.[37] Like Washington growers a few decades later, California citrus growers faced market gluts and declining prices. Fruit packing and grading was not standardized, and distribution was decentralized, left to each individual grower. In addition, growers had to deal with middlemen who stood between them and eastern consumers. Many growers complained about freight rates, damage to fruit in shipment, and dishonest fruit brokers who took

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[36] H.E. Erdman, *The California Fruit Growers Exchange: An Example of Cooperation in the Segregation of Conflicting Interests* (New York: American Council Institute of Pacific Relations, 1933), 6.

[37] Tufts, "The Rich Pattern of California Crops," 218.

exorbitant commissions. Individual growers had little leverage against eastern fruit brokers who took advantage of growers' ignorance of eastern markets and regional crop output to drive prices lower.

Cooperative marketing offered a solution for controlling surpluses and distribution, gathering and disseminating information about the markets, and coordinating marketing efforts among farmers to reduce competition and increase prices. By the mid-1880s, California growers began forming protective organizations to help regulate their losses. For example, the Orange Growers' Protective Union of Southern California, founded in 1885, sent two men east to interview prospective fruit brokers and to choose reliable men to act as agents for the union. Throughout the early 1890s, dozens of organizations sprang up, each with a slightly different method for attacking marketing problems. Some dealt only with cooperative packing, some only sold fruit, while others attempted to regulate both the sale and packing of fruit. By 1893, growers had become desperate to sell their fruit as overproduction – or, as argued by many clever boosters, under-consumption – continued to push prices downward. Willing to sacrifice autonomy for profits, growers in all California's major citrus districts had formed local cooperatives, and in 1893, these were gathered together under an umbrella organization, the Southern California Fruit Exchange. During its first two seasons, the Southern California Fruit Exchange allowed individual exchanges to continue selling fruit on their own. This, however, proved to be a confusing system that did little to alleviate growers' marketing problems. Finally, in 1895, the exchange incorporated and required that all its

membership through exchange representatives.[38] In 1903, the Southern California Fruit Exchange reorganized as the California Fruit Growers Exchange and settled into a formula that worked relatively well. Local associations still possessed a great deal of autonomy and were responsible for picking, grading, packing and loading the fruit on to railcars. The central organization maintained a sales agency that collected market data and coordinated sales and shipments from the various local districts. By 1932, the California Fruit Growers Exchange had 210 local associations with 13,000 growers in 26 districts.[39]

California fruit growers were not the only ones to form cooperative associations for the sale and marketing of fruit. As fruit production became more industrialized and oriented toward national rather than local markets, growers of other types of products organized as well. One example of this was the cranberry growers of Massachusetts, New Jersey, and Wisconsin. Local cooperative associations formed in these states as early as 1895, but these small cooperatives by themselves were not enough to combat larger market forces. In 1906, market conditions deteriorated severely. Competition between growers was so intense that cranberries were selling for as little as seventy cents a barrel. In response to these low prices, the growers from these states formed the National Fruit Exchange in 1907. Prices the following year increased to an average of $6.33 a barrel as a direct result of cooperation among the growers. The exchange opened distribution offices in New York City and Chicago to coordinate national shipments of fruit. All crops were

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[38] Erdman, *The California Fruit Growers Exchange*, 7-9.

[39] Ibid., 11-12.

pooled; farmers were required to ship fruit when notified by the association rather than waiting for the best prices. This meant that farmers were paid an average season price per barrel at the end of the season. By doing so, growers were able to prevent the market gluts and undercutting that had previously devastated the market. In 1911, the National Fruit Exchange merged with its largest competitor, the Growers' Cranberry Co., to form the American Cranberry Exchange. Sixty-five percent of cranberry growers in the nation were part of this organization by the 1920s.[40]

Cooperative organizations could provide many benefits for growers, and by the early years of the twentieth century, Washington growers, hoping to reap the same benefits seen in other areas, had started forming a variety of organizations, many with by-laws based directly on those of California cooperatives. Many of the Washington shippers and growers who advocated cooperatives pointed to California as an example for the benefits that growers could gain. Cooperatives, associations, and unions sprang up across the state wherever fruit was grown. In 1907, *Better Fruit* ran the full text of the by-laws and articles of incorporation adopted by several different fruit associations, including the Hood River Fruit Growers Union, the Wenatchee Valley Fruit Growers Association, the Spokane Fruit and Vegetable Growers Association, and the Yakima County Horticultural Union. The provisions adopted by these organization had many similarities. Most made provisions for overseeing packing and shipping of fruit, and they included provisions for constructing and maintaining packing and storage facilities.

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[40] United States Department of Agriculture, *Sales Methods on Policies of a Growers' National Marketing Agency*, Bulletin No. 1109 (Washington, DC: Government Printing Office,1923), 5-14

Cooperatives advocated common packing arrangements that lent themselves to uniformity and easy inspection. Both the Wenatchee and Yakima cooperatives enacted by-laws that enabled them to purchase supplies such as pesticides and spraying equipment to distribute to their members at a reduced cost. The associations also adopted provisions that allowed the organization to reject any fruit that failed to meet association standards.[41]

There was a move toward an organization that would speak for all growers in the Northwest. The first proposal for such an organization was adopted at the State Horticultural Society meeting in Everett, Washington, in January 1907. This organization, called the "Federation of Washington Fruit Growers," was formed to promote uniform shipping and packing practices and to disseminate current scientific and marketing research to growers. Each member association was entitled to three delegates, and each association was required to turn over its entire crops to the federation for distribution and sale.[42] Attempts were renewed in 1911 to organize Northwest growers into associations based on the California Fruit Growers' Exchange. Growers met in Walla Walla, Washington, in February 1911 to formulate a plan for an organization encompassing Washington, Oregon, and Idaho that would establish a sales system, control fruit distribution, and maintain marketing reports. Local rivalries, however, prevented this organization from taking root. As growers continued to debate the merits of this proposal through the summer and fall of 1911, cooperatives in Hood River,

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[41] "How to Form Fruit Growers' Associations," *Better Fruit* 1, no. 9 (March 1907): 3-13.

[42] Ibid., 3.

Oregon, and Wenatchee refused to join.[43] This early attempt at consolidation was unsuccessful, largely because growers were suspicious of any organization that might cause them to lose direct control of their fruit. In addition, strong regional rivalries, born out of the booster spirit of attracting the most settlers and wealth to a particular region, made this type of cooperation difficult to achieve.

It was difficult at times to persuade growers to join cooperatives because joining meant that the grower had to give up a degree of control over his fruit and the price at which it was sold. Just as in California, growers were initially cool to the idea of cooperative marketing, often because they did not understand the concept.[44] Cooperatives did not provide payment until all of the fruit in that season's pool had been sold, so it was often spring before growers received payments on the previous fall's crops. Many growers often balked at the various fees and dues charged by cooperatives. To some, this was another example of the middlemen depriving the grower of his hard earned profits. Even by the 1920s, when the industry was better established, many growers continued to deal independently with commission houses and cash buyers.[45]

Regardless of these objections, strong local and regional cooperatives developed across the state such as the Yakima Horticultural Union, the Yakima Fruit Growers'

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[43] John Waldo Ellison, "The Cooperative Movement in the Oregon Apple Industry, 1910-1929," *Agricultural History* 3, no.2 (April 1939): 80-81.

[44] Erdman, *The California Fruit Growers Exchange*, 9.

[45] For a more complete discussion of the early evolution of Washington cooperatives see Fahey, *The Inland Empire;* Maynard, *Marketing Northwest Apples*; William A. Luce, *Washington State Fruit Industry . . . A Brief History* (N.p., 1972); and Ellison, "The Cooperative Movement in the Oregon Apple Industry, 1910-1929."

Association, the Wenatchee-Okanogan Cooperative Federation, and the Wenatchee District Cooperative Association. The oldest of these organizations, the Yakima Horticultural Union, was founded in 1902 when very few apples were being shipped east. The union established a business relationship with a cash buyer named J.M. Perry, who agreed to handle the union's fruit exclusively. By 1910, the union had constructed a stone warehouse, and by 1919, it owned cold-storage facilities.[46] These smaller, localized cooperatives had much more success than broad, state-wide initiatives. Growers entered into these relationships with their neighbors, not growers from rival districts, and they could see exactly where their dues and membership fees were going.

Leaders in the industry continued to rally growers behind the concept of scientific marketing, and they attempted to convert more growers to their way of thinking. Growers may have been able to rely upon cash buyers and commission agents in the past, but now growers needed to take a proactive approach to creating demand among consumer markets in the east. In an address before the International Apple Shippers' Association in 1913, speaker U. Grant Border admonished growers to change their business methods:

> But what of our friend the apple producer? . . . You know he prefers to carry on his business without any foreign advice. His general inclination is to not only grow and pack the fruit himself, but to market it himself. His annual custom at crop time has been to seek the cool of his porch, smoke his pipe contentedly, and listen to the clamor of bidders and buyers. Between crops he spends his time perfecting his fruit, perfecting his pack, and making two apples grow where one grew before, giving no thought to that other most important factor of likewise increasing consumption. So finally another crop time rolls around . . . he begins to wonder if his calendar is right.[47]

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[46] Maynard, *Marketing Northwest Apples*, 62-63.

[47] U. Grant Border, "Co-operation in Advertising the Apple," *Better Fruit* 8, no. 3 (September 1913): 16.

This mythical producer, like so many real producers in Washington, could no longer assume that the high quality of his fruit would be enough to attract wholesalers. As production in Washington's apple districts increased, so too did competition for that fruit on the market. A more sophisticated strategy was necessary. H.C. Hampson of the North Pacific Fruit Distributors argued that "just as *scientific manufacturing* cannot succeed without scientific advertising, distributing and selling organization, so *scientific production* alone will result in failure without *scientific advertising, distributing and selling machinery*."[48]

Those in favor of forming cooperatives tried to convince their fellow growers of the benefits of such organizations. *Better Fruit*'s editor E.H. Shepard was a great advocate of cooperatives, and he used the magazine as a platform for persuading growers of their merit. Shepard acknowledged the feelings among some growers that middlemen should be eliminated entirely. He knew this was impractical, and on several occasions he reiterated the need for railroads, distributors, and retailers and stated that middlemen deserved to make enough profit to cover their expenses. Shepard advised growers not to "censure" those who were against cooperatives. Instead he asked that they

> be patient. . . . I believe is it the duty of everybody who has had business experience, who knows business methods, so far as time and finance will permit, to try and create a better understanding of necessary expenses in distribution. . . . I believe I am justified in saying that a large part of the fruitgrowers who believe

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[48] H.C. Sampson, "Seventeen Reasons WHY a Cooperative Central Selling Agency of the Fruit Growers of the American Northwest is a Necessity" (paper presented at the Second National Conference on Marketing and Farm Credits. Chicago, April 14-17, 1914). Northern Pacific President's files, Box 137.E.19.5B, Minnesota Historical Society.

> the middleman should be eliminated are people who have never been engaged in any commercial business of any importance.[49]

In other words, growers who opposed cooperatives were not true businessmen, and they were clinging to outdated ideas about farming. In all probability, these growers would not survive in the fruit industry if they persisted in their stubborn independence.

Arguments in favor of cooperatives, as outlined in informational pamphlets published by cooperatives such as the Northwest Fruit Exchange or the North Pacific Fruit Distributors, ranged from the production to the marketing end of the apple industry.[50] On the production end, they argued that growers could save money by packing their fruit cooperatively, and reduce losses by proper grading and inspection. Individuals could not maintain the same consistency and quality in grading standards as trained workers in a cooperative warehouse. On the marketing end, growers would benefit from the collective knowledge of markets that only experienced agents could provide. Major fruit cooperatives had offices located in many eastern cities and in Europe. The Northwest Fruit Exchange boasted that it was in telegram-contact with all of its agents and offices 365 days a year. By eliminating competition among themselves, growers

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[49] E.H. Shepard, "The Northwest Fruit Industry," *Better Fruit* 8, no. 5 (November 1913): 12.

[50] The Northwest Fruit Exchange, formed in 1910, was a private marketing organization affiliated with the North American Fruit Exchange that acted as a sales agency for local Northwest Cooperatives. They were very successful, in part because local cooperatives were able to maintain their autonomy. The exchange served only as a sales agent. The Pacific Northwest Fruit Distributors, on the other hand, was formed in 1912 as a mutual cooperative of growers in Washington, Oregon, and Idaho. Initially, it was very successful, shipping 4,000 cars of fruit in 1913, and 5,000 cars in 1914. Dissent among members, regional jealousies, and lack of confidence in the organization's leadership eventually led to its demise. Ellison, "The Cooperative Movement in the Oregon Apple Industry, 1910-1929," 84-85.

could focus on competing with growers from other states. By combining resources, growers could shield themselves from volatile markets in a way that individual growers could not. An individual grower could not afford to have an agent in every city where their fruit was sold, nor could he force changes in government or railroad structures. The most important argument was that growers themselves maintained control of the system. The sales agents who acted as middlemen were not eastern strangers; they were men of the fruit growers' choosing. Since they worked directly for the growers, growers could be assured that their best interests were always at the fore.[51]

H.C. Sampson of the North Pacific Fruit Distributors provided an anecdotal story to illustrate the importance of being affiliated with a cooperative. One peach grower in Yakima asked permission to put the "Big Y Brand," used by the Yakima Fruit Growers' Association, on the inside of his box and his own labeling on the outside. Permission was granted, though the peaches were graded, inspected, shipped, and sold as "Big Y." The Portland purchaser became very angry when he received the shipment, and he demanded to know why he had not received "Big Y" peaches. Even though the cooperative assured him that he had, the purchaser demanded a reduced price of 5 cents per box, a total reduction of $55. The purchaser said that the labels on the inside of the box "made no difference at all, as his retail customers had built up a trade for 'Y' brand peaches, their consumers demanded 'Y' brand peaches and nothing but 'Y' brand peaches would satisfy

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[51] "A Way to Sell Apples," Northwest Fruit Exchange, April 1913, Northern Pacific President's files, Box 137.E.19.5B, Minnesota Historical Society; H.C. Sampson, "Seventeen Reasons."

them."[52] Standardization and affiliation with recognized cooperatives mattered a great deal when it came to marketing success. When interviewed by the Northern Pacific, which served the Yakima Valley, James S. Crutchfield stated that its competitors in Wenatchee were faring better because "an absent buyer knows just as well what he is getting when a four tier Wenatchee Winesap is described to him on paper as if he were personally looking at the fruit."[53] Many argued that this level of quality control could only be achieved through cooperation. As E.H. Shepard, editor of *Better Fruit* explained it: "Every mercantile business, every factory standardizes its output. If we are to succeed we certainly should have the common sense to adopt methods of business that have evidenced their value."[54]

As cooperatives developed, they sought to strengthen their relationships with the railroads. Although railroads were vital to the fruit industry, at times there was tension between growers and the railroads. For their part, the railroad had a vested interest in making sure the industry was a success, but at the same time, they were for-profit organizations concerned with their own bottom line. While railroads often went out of their way to keep their shippers happy, they were not in the habit of doling out welfare to demanding growers. Local newspapers sometimes exhibited passionate rhetoric against the railroads, and it was echoed in correspondence to railroad headquarters. By and large,

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[52] Sampson, "Seventeen Reasons."

[53] Interview with James S. Crutchfield, December 20, 1912, Northern Pacific President's file, Box 137 E. 19.5B, Minnesota Historical Society.

[54] E.H. Shepard, "Common Sense Applied to the Fruit Industry," *Better Fruit* 8, no.1 (July 1913): 8.

complaints stemmed from a larger frustration with distribution systems that were often out of both the growers' and the railroads' control. Of the things growers complained about most, damage in transit and lack of storage facilities stand out as areas where the interests of growers and railroads collided.

Fruit damage in transit was a large topic of discussion for both growers and the railroads. Growers were often frustrated with railroad companies for giving them the "run-around" and for not settling their damage claims promptly. Once the fruit left their hands, they had no sure way of knowing if or when it reached its destination, save for their communication with the carrier and commission agent. Understandably, this lack of control was at times a cause for great concern. Imagine a grower's disgust at finding out that his carload of perfectly good apples was damaged because the car had been misplaced on the wrong siding or had not been properly iced. Railroads answered by blaming growers for sending poor quality and improperly packed fruit. Since growers and the railroads were concerned with their profit margins, concerns from both sides were valid, and neither side was solely to blame. Rather, the logistics of moving fruit such long distances with crude refrigerated cars meant that some damage was bound to occur. Growers and the railroads needed each other to ensure the success of their businesses, so both sides worked to find acceptable solutions.

Publications such as *Better Fruit* offered advice to fruit shippers to help foster better relations with the railroads and to make sure produce arrived in top condition. They instructed shippers on how to make written claims for fruit damaged in transit and urged them to save all paperwork. Growers were also advised to get at least two witnesses to inspect the car for contents, condition of ice, state of vents, temperature, and door seals –

all factors that if faulty could lead to damaged shipments. Giving carriers icing instructions was "not only wholly unnecessary and dangerous, but absolutely suicidal." Icing was the carriers' responsibility, and shippers had no way of knowing what kind of delays or other problems the car might encounter during shipment. Apples needed to be stored at 32-40 degrees Fahrenheit during shipment to maintain freshness, and to maintain this temperature each refrigerated car required 10,000 pounds of ice.[55] If the fruit was damaged in transit, the railroads could claim to have followed the shippers directions precisely, even if these instructions were faulty.[56]

Not only were growers advised to protect themselves against the railroads, cooperative associations, large cash buyers, and individual growers actively petitioned the railroads for better facilities and the government for better legal protection. On some counts, they were successful. Oregon and Washington passed laws that required fruit to be labeled with the name of the shipper. States also appointed county and district horticultural agents who oversaw compliance with packing and grading rules and who certified the condition of the fruit before shipping.[57] Associations also held their members to strict packing standards. By policing themselves on the front end of the process, growers could be sure that fruit left their hands in good condition. Meanwhile, growers petitioned the Northern Pacific for a fruit inspector. Some railroad officials initially

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[55] Thompson, *Pacific Fruit Express*, 345.

[56] George C. Stiles, "Hints to Shippers and Receivers of Fruit," *Better Fruit* 1, no. 8 (February 1907): 16-19.

[57] "Perkins Fruit Bill," *Better Fruit* 1, no. 9 (March 1907): 17; Maynard, *Marketing Northwest Apples*, 13.

thought this was a good idea, hoping that it would reduce the number of damage claims, but others disagreed. An inspector would have increased the railroad's liability, regardless of the nature of the damage.[58] The railroad had its own interests at heart when it refused to hire inspectors; however, the railroad was right in recognizing that this could have created a serious conflict of interest. The system of inspection controlled by growers' associations and local government was in the growers' best interests.

Storage was another issue that concerned both growers and railroad executives. Unlike citrus, which could be harvested nearly year round, or soft fruits, which had to be immediately shipped or canned, apples were harvested within a two to three month period every year, yet could be stored for several months. By placing apples in short-term storage, growers avoided market gluts by waiting to sell their fruit when prices were most favorable. In the early years of apple production, storage facilities were often in short supply. The first ice-cooled storage plant was opened in Chicago in 1878 by the Western Cold Storage Company. The company switched to a mechanical refrigeration system in 1886. The first fully mechanical refrigeration plant opened in Boston in 1881. By the 1890s, several U.S. cities had mechanized cold-storage facilities. The American Warehousemen's Association, organized in 1891, listed twenty-nine cold storage companies in twenty-cities in its 1891-1892 directory; Portland, Oregon had the only storage facility in the Northwest. Statistical information on the number of storage plants remained patchy until the 1920s. It was estimated that there were 620 cold-storage

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[58] George Reid to Howard Elliott, January 9, 1913 and George Slade to Howard Elliott February 18, 1913, Northern Pacific President's file, Box 137.E.19.5.B, Minnesota Historical Society.

warehouses in the U.S. in 1904. By 1914, there were 898 cold-storage warehouses, the majority of which were located in New York and Chicago.[59]

For growers and railroads, the shortage of local storage facilities, both insulated warehouses and mechanically cooled warehouses, was vexing. Although the technology existed, the cost of constructing a mechanically refrigerated warehouse was prohibitive. Early storage facilities were insulated, ventilated warehouses that took advantage of cool winter temperature to keep fruit cool. *Better Fruit* published do-it-yourself plans for building insulated storage sheds, and some growers undoubtedly built such sheds on their property. Cooperatives and cash buyers owned and operated larger storage warehouses which were often coupled with packing houses. In the early twentieth century, storage warehouses rented space to individual growers to recoup expenses. By the 1910s, however, apple production had increased significantly, and many warehouses chose to reserve space for their own members. Since many growers refused to join cooperative organizations, they were excluded from access to these storage facilities. This fueled their skepticism and dampened their opinion of cooperatives even further.

Growers often looked to the railroads for advice and assistance on these and other shipping related matters. C.L. Durkee, a disgruntled grower in Meyers Falls, Washington, wrote to Louis Hill, then president of the Great Northern Railway, to ask for assistance in finding storage facilities for his apples. Durkee argued that it was the railroad's responsibility to care for the farmer, because if not for the railroad, the farmer would not be on the land.

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[59] Edward A. Duddy, *The Cold Storage Industry in the United States* (Chicago: University of Chicago Press, 1929), 4-7.

This government is spending thousands of dollars annually through The Dept. of Agriculture. The state through its agri[cultural] colleges is doing the same. The Rail Roads of the country is sending out its Demonstration trains with its well clothed well paid, well fed Professors. For to proclaim to the World that we have room to let & to keep before the people the slogan "Back to the Soil." But I have never found a Bulletin telling how to keep them on the "Soil" after you got them there. Only by the old time method too poor to move.

Durkee, like many other growers, refused to join his local fruit growers' union because he objected to the $25 membership fee and the 10 percent commission collected by the association. For growers like Durkee, associations represented a departure from the agrarian ideals that had drawn them to Washington in the first place. Apple orchards were supposed to be self-contained, self-sustaining units that supported families, not industrialized cooperatives that smacked of big business. "What this country needs is settler not orchardists," complained Durkee, "Self sustaining people, not paupers. Contented homes Not a lot of specialists & sore heads."[60]

The railroads were as frustrated by the lack of local storage facilities as Durkee. Most cold-storage facilities were located in the east, near consumer markets. This meant that the railroad had to haul the entire apple crop east within a very narrow time frame.

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[60] C.L. Durkee to Louis Hill, July 31, 1912, Great Northern President's Subject Files, Box 132.E.17.9B, Minnesota Historical Society. The Great Northern sent an agent to Meyer Falls to investigate Durkee's claims, even though he only shipped one or two carloads of apples per year. They found that there were several storerooms available for rent, but, unlike the fruit growers' union warehouse, they were not located directly on the tracks.

Refrigerated railcars cost a third more to operate than a regular box car. In 1912, the average round trip time for a refrigerated car, including loading and unloading, was 73 days; each car could conceivably make five round trips per year. However, because of the lack of local storage facilities, apples were only moved in the fall and winter, in the weeks immediately after harvest. This meant that each car made only one round trip during the shipping season, a significant under-utilization of available rolling stock as refrigerated cars were not easily adaptable to other purposes. As apple production increased, railroads needed an ever larger number of cars. Since the size of the crop varied from year to year, railroads did their best to estimate car requirements well in advance of the next shipping season. In 1912, the Northern Pacific had 1,500 refrigerated cars, and an additional 1125 were ordered for the 1913 season. In 1915 the Great Northern estimated that there would be approximately 9,000 to 10,000 carloads of fruit shipped out of Wenatchee. At that time, the Great Northern only owned 3,600 refrigerated cars, although not all of these would be available to handle the Wenatchee crop. General manager J.M. Gruber recommended the purchase of an addition 1,000 cars and commented that "it seem[s] too bad to have to buy refrigerator cars because the only time we have use for them is during the apple and potato crops."[61]

Railroad experts argued that growers needed to store a third to half of their crops onsite. This would have the dual effect of giving growers more control over the disposal

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[61] Thomas Cooper, "The Relation of the Producer and the Railroad in Marketing Farm Products" (paper given at First Annual Short Course, Agriculture, and Horticulture, Yakima, Washington, February 20, 1913) Northern Pacific President's Files, Box 137.E.19.5.B, Minnesota Historical Society; W.P. Kenney to J.M. Gruber, December 18, 1915 and J.M. Gruber to L.W. Hill, November 24, 1915, Great Northern President's File, Box 132.F.13.2F, Minnesota Historical Society.

of their fruit and alleviating pressure on the railroads' refrigerated car fleets.[62] But the question of who would be responsible for constructing and maintaining these storage facilities was another matter. As Howard Elliott, president of the Northern Pacific, wrote, the railroads "have a vital interest in trying to make the fruit business a success," therefore they should assist growers with storage.[63] On the other hand, some argued that "the function of the railroad company is transportation and transportation only, and it is better in the long run for business generally that the railroads stick to the particular business for which they are organized."[64] Elliott agreed with Cooper that railroad involvement in operating storage facilities could lead to difficulties in the form of damage claims and accusations of discrimination in car availability and rates, both matters regulated by the Interstate Commerce Commission. Elliott also recognized that "the success of our line in the Yakima Valley depends so largely on the care and marketing of fruit that we may in self defense have to stand responsible for some investment in storage plants, just as we have in cars, so as to keep this business on its feet." Elliott estimated that the Northern Pacific grossed $2 million from fruit shipments alone, profits which gave the railroads a keen interest in promoting the industry's

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[62] Thomas Cooper, "The Relation of the Producer and the Railroad in Marketing Farm Products."

[63] Howard Elliott to George T. Reid, April 2, 1913, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

[64] Thomas Cooper, "The Relation of the Producer and the Railroad in Marketing Farm Products."

success.[65] Without fruit shipments, the Northern Pacific's business in the Yakima Valley would have been negligible. To avoid potential conflicts of interest, Elliott suggested that the Northern Pacific could assist growers in finding other funding for warehouses through local banks or trusts. The railroad would stand behind the bank's investment, but growers would not be informed of this involvement. Alternatively, the railroad could construct storage facilities and then rent or sell them to growers.

Several investors in the Yakima Valley petitioned the Northern Pacific for assistance in financing and constructing cold-storage warehouses. Despite the railroad's interest in and commitment to the apple industry, time and time again it refused to assist in the construction of storage plants along its lines. The railroads argued that involvement in packing and storage of apples would lead to a serious conflict of interest and open the door for claims of damage and discrimination. For example, if the railroad were to build a cold-storage plant at Zillah, as one plan proposed, where would the construction stop? The railroad would then be pressured to build warehouses at all of its stations. "The position that we would like to take and to maintain," wrote Northern Pacific President Howard Elliott, "is that we will provide the cars and the transportation, and that the fruit grower will provide the fruit and the storage at the shipping points."[66]

The 1912 apple crop was the largest to date, and it put tremendous pressure on railroads and local storage facilities. One Northern Pacific official estimated that $96,000

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[65] Elliott based his estimated gross on 10,000 outbound fruit cars charged $200 each for shipping. Howard Elliott to George T. Reid, April 2, 1913.

[66] Ibid.

in storage fees could have been saved if more local facilities had been available.[67] Given the shortage of storage warehouses over the next few years, growers asked for storage-in-transit privileges, meaning that the railroads would agree to store fruit in refrigerated cars on sidings rather than ship it directly to a final destination. Railroads were wary of these arrangements because they did not want to be seen as favoring apple growers over other types of shippers, because the Interstate Commerce Commission required that the railroads treat all shippers in the same manner. Storage-in-transit was an expensive, temporary solution, and the railroads did not want to be forced to offer this service to everyone.[68] Growers were at times desperate for these privileges because without local storage, they lacked leverage against eastern buyers who controlled eastern warehouses. In 1912, the railroads finally resorted to storage-in-transit because the crops were so large across the United States that eastern storage warehouses were full and had no more room for western crops.[69]

While storage-in-transit was used occasionally, it was not a permanent solution. Ultimately, the Northern Pacific and its competitor the OWR&N, in cooperation with the Yakima Growers' Association, began construction on a warehouse at Zillah, Washington

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[67] Thomas Cooper, "The Relation of the Producer and the Railroad in Marketing Farm Products."

[68] C.W. Burnham to Louis Hill, December 14, 1911, Great Northern President's Subject File, Box 132.E.17.9B, Minnesota Historical Society.

[69] Washington Growers' Associations to Carl R. Gray and Louis Hill, September 14, 1912 (telegram); Carl R. Gray to Washington Growers' Associations, September 17, 1912, GN President's Subject Files, Box 132.E.17.9B, Minnesota Historical Society.

in 1914.[70] Aside from this singular joint venture, as the industry developed throughout the 1910s, private interests including individual cash buyers, commission houses, and cooperatives raised the capital to construct enough warehouses to meet industry needs. A survey of the geographical distribution of cold-storage warehouses completed in the 1920s showed that in 1914, the Pacific region, which included Washington and California, had 4,906,650 cubic feet of storage space, or 6 percent of the national total. By 1927, the Pacific region had 14,260,661 cubic feet of storage, a 290 percent increase and 24.9 percent of the national total. In 1927, Washington ranked fourth after New York, Illinois, and Kansas as the state with the most cold-storage capacity. The majority of this space was devoted to storing apples.[71]

Despite occasional conflicts, the railroads, for the most part, worked to establish strong business relationships with the growers. Even though growers often complained about rail service, they greatly depended on the railroads for their livelihood. Without adequate rail transportation, the apple industry would not exist. Some historians have contended that cooperatives formed as a response to the overbearing pressure placed on growers by big business – namely the railroads. By forming cooperative organizations, the argument goes, growers could stand up for themselves against these corporate bullies. In his study of the development of the apple industry, Tony Zaragoza argues that as growers formed a new class of middle-class capitalists, they cast railroads as one of their

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[70] George Reid to J.M. Hannaford, April 22, 1914, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

[71] Duddy, *The Cold Storage Industry in the United States*, 13, 95.

primary enemies. In response, railroads attempted to "remind growers of their power."[72] Correspondence in the Northern Pacific and Great Northern archives reveals a different story. Cooperatives and business leaders in Washington actively sought the help and cooperation of the railroads. When forming the Northwest Fruit Exchange, W.T. Clark corresponded extensively with Louis Hill, president of the Great Northern. Clark even sent Hill the prospectus and sample contract for the association.[73] Railroads actively encouraged growers to form associations, because they realized that the formation of cooperative associations would make the industry as a whole, including the railroads, stronger. Cooperatives could address issues of storage and marketing that the railroads could not, and in solving these issues, cooperatives made things easier for the railroads. Issues with car shortages, transit times, and freight rates persisted, despite the formation of cooperatives, largely because of the complicated logistics of moving a perishable product transcontinentally. While growers often complained vocally about these matters, they were not part of a conspiracy on the part of the railroads to abandon the industry. The railroads made determined efforts to keep abreast of market conditions so they could transport crops as efficiently as possible.

Through cooperatives, growers hoped to increase their profits and avoid violent swings in glutted markets. While they agitated for lower freight rates and pushed to keep more profits for themselves, they were not entirely unrealistic in their expectations. In a

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[72] Tony Zaragoza, "Apple Capital: Growers, Laborers and Technology in the Origins of the Washington State Apple Industry, 1890-1930" (PhD diss., Washington State University, 2007), 85-90.

[73] W.T. Clark to Louis Hill, October 23, 1911, Great Northern President's Subject File, Box 132.E.17.9B, Minnesota Historical Society.

essay on the need for cooperation, E.H. Shepard, editor of *Better Fruit*, argued that growers of perishable products were not getting their due. Nationally, farmers received 46.5 percent of the final retail value of their crops, with the remainder divided among jobbers, retailers, waste, and railroads. Without figures for perishable products, Shepard relied on several pieces of anecdotal evidence from other parts of the country to argue that those who grew perishable goods only received 13 percent of the final retail price. Despite some finger pointing at middlemen who were presumably taking profits from the farmer, Shepard stated that:

> The railroad is entitled to a freight rate that will pay a satisfactory return on the investment. The wholesaler and the fruit dealer are entitled to a profit that is reasonable on the amount invested in his business and for his services. I believe that many fruit growers today are indiscriminately condemning many wholesale dealers who are purchasers of our fruits. We need the good ones; we should eliminate the bad ones.[74]

Even in *Better Fruit*, one of the most vocal outlets for protests against middlemen, waste, and loss of profits, there was an acknowledgement that middlemen played an important role in the industry and that they could not be eliminated. The goal was to create trust with these middlemen and to establish a system that would place more control and profit in the hands of individual growers. Growers, distributors, and the railroads needed to coordinate their efforts to market Washington fruit successfully.

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[74] E.H. Shepard, "Common Sense Applied to the Fruit Industry," 7-9.

Chapter 5

"An apple a day keeps the doctor away": Advertising, 1910-1929

Resolved: That I am sharpening my pencil to book orders for 100 carloads of the finest Wenatchee apples. I want them so I can give a few of my friends in my home town of New York just one little "taste." My friends in New York don't know much about Wenatchee apples yet but they will before Tige and I get through with them.

- Buster Brown

While growers in Washington worked to fix their marketing problems by improving packing, storage, and distribution methods, another key factor remained – creating demand among consumers. By the 1910s, industry leaders began preaching that *underconsumption,* not overproduction, was the result of slow sales. In 1913 an apple booster with a flare for drama made this point in *Better Fruit*:

> I don't believe there ever will be an overproduction of good apples. Overproduction of the best fruit ever created? Why, you might as well talk of overproduction of health or happiness! . . . Don't talk to me of overproduction when there are 20,000,000 wage earners and 30,000,000 school children who leave home every day without an apple in their lunch baskets! History records but one year when there were too many apples, but that is harking back to Adam.[1]

The question was this: how could apple growers convince the "apple-less masses" to eat more fruit? If the apple industry was to be successful, then growers needed to establish a large, stable market base through advertising. Consumers purchased low cost barreled apples from local orchards, but they had to be persuaded to purchase the more expensive, boxed apple. Improving the appearance of the fruit through careful grading and packing

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[1] U. Grant Border, "Co-operation in Advertising the Apple," *Better Fruit*, 8 no. 3 (September 1913): 18.

helped, but growers required a more sophisticated means for creating consumer awareness and loyalty. The Northwest Fruit Exchange summarized the problem:

> The Northwestern apple is a specialty product, not a staple. Originating 2500 miles from the average market, its first cost, plus freight, is approximately as high, *per box*, as is the average prices of the Eastern apple *per barrel*, within 200 miles of its market. Moreover, for every carload of apples grown in the Northwest, there are 20 carloads grown elsewhere.[2]

To place this disparity in better perspective, three western boxes were the equivalent of one eastern barrel, meaning that western apples were at least three times as expensive as their eastern competition. Washington apples were a luxury item, and if consumers were to be persuaded to spend money on a familiar product they could purchase locally for a third of the cost, growers had to develop innovative marketing methods.

By the turn of the century, food and a host of other manufactured goods were being produced on an industrial scale. The increased production and availability of Washington fruit in the early twentieth century was part of a larger national trend toward the production of more consumer goods in general. For example, between 1899 and 1905, food production increased 40 percent. Between 1890 to 1900 cheap jewelry production doubled, and from 1890 to 1914 glassware and lamps increased by almost 300 percent.[3] Consumers had access to an ever increasing number of material delights. Historian William Leach argues that department stores became the new temples of consumption by shaping consumer tastes and introducing Americans to new methods of

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[2] Northwest Fruit Exchange, *A Way To Sell Apples*, (N.p.: Northwest Fruit Exchange, 1913), Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

[3] William Leach, *Land of Desire: Merchants, Power, and the Rise of a New American Culture* (New York: Pantheon Books, 1993), 16.

advertising. "By World War I," writes Leach, "Americans were being enticed into consumer pleasure and indulgence rather than work as the road to happiness."[4] Department stores taught people how to be consumers. Items like food and clothing, which had once been primarily viewed as objects of sustenance, became things to be enjoyed and consumed. The word "consumption" itself shifted from a negative meaning of wasting or destroying, to a more positive meaning that implied the satisfaction of desire.[5]

Department stores rose to prominence in the 1890s. Most dry goods stores prior to this time were modest in their offerings, but by the turn of the century, some stores had as many as 125 departments. Bloomingdale's in New York or The Fair in Chicago, for example, offered up-scale foods to their customers, including "preserved and refrigerated meats, canned foods, fresh vegetables, cheeses, breads, candies, numerous coffees and teas, and gourmet specialties." By 1914, Macy's in New York was also selling "all the rare tropical fruits and vegetables, irrespective of season."[6] Most stores were reluctant to fully engage in food trade, despite the profitability of these departments. And while most of the food items offered at large department stores were luxury items, far beyond the reach of average consumers, average consumers frequented department stores, if for no other reason than to window shop. It is more than plausible that consumers became familiar with certain food products through such a setting.

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[4] Leach, *Land of Desire*, 3-4.

[5] Alan Trachtenberg, *The Incorporation of America: Culture and Society in the Gilded Age* (New York: Hill and Wang, 1982), 130.

[6] Leach, *Land of Desire*, 22-23.

Chain stores, like department stores, also increased in popularity in the early twentieth century. According to Leach, "In 1886 only 2 chains in all businesses operated 5 stores; in 1912 a total of 177 companies operated 2,235 stores; but by 1929 nearly 1,500 companies were doing business in nearly 70,000 outlets."[7] These included a variety of businesses that offered more specialized goods and services than departments stores, such as clothing, hardware, groceries, or lodging. Whereas average American consumers in the nineteenth century would have purchased their food from a number of merchants such as greengrocers, who sold fresh fruits and vegetables, butchers, and bakers, American consumers by the 1920s could purchase their food from a chain outlet such as the Atlantic & Pacific Tea Company (A&P), Kroeger, or Safeway. A&P was one of the first grocery chains in the United States. Like subsequent chains, it initially focused on non-perishable grocery items, and A&P built its empire on tea and coffee, only later adding other dried, tinned, and perishable goods. A&P added fresh fruit and vegetables to its product line in 1924.[8] By the 1920s, most chain stores sold perishable products, and by the 1950s they had replaced the host of merchants that once had supplied American households.

While department and chain stores were responsible for a shift in consumer preferences and shopping habits, they were most important for their role in creating new methods of advertising and encouraging the development of branded products. "Advertising arose as a functional institution," writes historian Alan Trachtenberg,

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[7] Ibid., 273.

[8] William I. Walsh, *The Rise and Decline of the Great Atlantic & Pacific Tea Company* (Secaucus, NJ: Lyle Stuart, Inc., 1986), 34.

"linked to the great shifts in the spheres of production and distribution, to new technologies of communication, to the growing empires of the big-city, and to the rise of the department store."[9] Advertising went hand in hand with educating consumers and increasing demand for new products. Department and chain stores provided advertisers with an opportunity to experiment with new methods for attracting consumers' attention. Before the 1890s, advertising consisted of cluttered print ads with small type and few illustrations. Advertising had the reputation of being linked to swindlers, quacks, and circus showmen such as P.T. Barnum. By the late nineteenth century, the completion of major transportation routes, communication lines, and increased manufacturing output led to large scale, nation-wide marketing campaigns that made such circus techniques respectable. Consumers were increasingly swayed by colorful images and catchy slogans. In the 1890s, several new forms of visual media were adopted by manufactures and retailers including illustrations used on labels and in print ads, colorful billboards, electric signs, and artistic shop displays. Between 1870 and 1900, the amount American businesses spent on advertising increased tenfold, from $50 million to $542 million. By 1910, that figure had increased to approximately $600 million per year.[10] The new advertising was not only colorful, it spoke directly to consumers' needs and desires. Stores and manufacturers had to convince consumers that their products, be it jewelry, lamps, hand creams, or fruit, were not frivolous luxury goods, but things necessary for everyday life.

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[9] Trachtenberg, *The Incorporation of America*, 135-136.

[10] Leach, *Land of Desire*, 40-41; Trachtenberg, *The Incorporation of America*, 136-137.

Businesses in the early twentieth century used a multi-pronged strategy to attract customers. Often campaigns were tested on a small, local scale before being implemented nationwide, as the introduction of Crisco on the national marketplace in 1912 illustrates. Proctor & Gamble developed Crisco to use up hydrogenated cottonseed oil surpluses left over from the manufacture of soaps. A few years earlier, N.K. Fairbanks, makers of Fairy soap and Gold Dust washing powder, attempted to market a similar product under the brand name "Cottolene," but consumers were unfamiliar with the product and had strong cultural preferences for familiar foods such as lard, butter, or chicken fat.[11] To overcome these preferences, P&G undertook an aggressive marketing campaign that started with giving Crisco to its employees free of charge months in advance of the national launch. Different marketing strategies such as street car signs, newspaper and magazine ads, store displays, cooking demonstrations, and the use of door-to-door salesmen were tested on a small scale in several cities. Finally, in December 1911, one month before the national marketing campaign started, three to six full-sized cans of Crisco were sent to every U.S. grocer, along with a letter explaining the upcoming campaign. Consumers who could not find Crisco at their local stores were encouraged to write to P&G and report the name of the offending store. These innovative marketing techniques, combined with continuous

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[11] Progressive reformers in eastern cities ran into similar resistance when they attempted to change the dietary habits of immigrants. Because immigrants did not conform to middle class American standards, reformers feared that their diets lacked adequate nutrition. Instead, like Cottolene's advertisers, they found that food preferences had deep cultural ties and were extremely hard to change. Harvey Levenstein, *Revolution at the Table: The Transformation of the American Diet* (Berkeley: University of California Press, 2003), 108.

advertising in national magazines, cooking schools, newspaper ads, and recipe booklets, made Crisco a household staple by 1915, a mere four years after its introduction.[12]

Like Crisco, Washington apples had to fight for space on retailers and consumers' shelves. Apples, unlike Crisco, had the advantage of being familiar, but while Crisco was a unique, branded product from its inception, apples were a common pantry staple. To most consumers, one apple looked much like any other apple, regardless of where it was grown. Washington growers had to overcome this perception and convince shoppers that their apples were in fact superior to those grown in other areas.

Initially, apple marketing revolved around sample shipments and railroad promotion. Complimentary boxes of apples were sent to high ranking politicians, foreign dignitaries, and celebrities such as President Roosevelt, President Taft, and Sarah Bernhardt. These shipments and the reactions of the recipients were reported in local newspapers.[13] James J. Hill, president of the Great Northern Railway, and his son Louis had a standing Christmas order with growers in the Wenatchee Valley, and they distributed these apples to friends and business associates in New York, Boston, and Europe in an attempt to find new purchasers.[14] Shipping samples to business associates to promote a region could backfire, as Howard Elliott of the Northern Pacific discovered

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[12] Susan Strasser, *Satisfaction Guaranteed: The Making of the American Mass Market* (New York: Pantheon Books, 1989) 5-13.

[13] "Winesap Apples to President," *Wenatchee Daily World*, May 18, 1909; "President Enjoys Apples," *Wenatchee Daily World*, June 2, 1909; "Mme. Bernhardt Eats Local Apples," *Wenatchee Daily World*, August 29, 1912.

[14] Louis Hill to M.O. Tibbits, February 3, 1908. Great Northern President's Subject File, Box 132.E.17.9B, Minnesota Historical Society.

when Robert Jones, a personal friend, wrote to inquire about purchasing Wenatchee apples. Elliott replied:

> I wish very much you would switch all of you apple business to the Yakima Valley, as when you buy from the Wenatchee Valley, the Northern Pacific gets no revenue at all, as that is on the Great Northern. The Wenatchee Valley raises good apples, but so does the Yakima, and the apples that I have sent you from time to time all came from the Yakima Valley.[15]

The tone of Elliott's letter indicated his frustration with the misidentification of the Yakima apples he had been sending Jones; however, Elliott was able to salvage the situation by asking Jones to distribute Yakima apples exclusively.

Growers also relied on the railroads to find new markets and increase awareness about their fruits. The Great Northern and the Northern Pacific were greatly concerned with the success of Wenatchee and Yakima, respectively, because successful marketing of Washington apples meant more traffic on the rail lines. The railroads featured Northwest produce on their dining car menus, advertised fruit at ticket offices, and sponsored fairs and exhibits. Cooperatives kept the railroads apprised of their advertising campaigns in an effort to coordinate publicity. While the railroads had a strong interest in promoting Washington fruit, they were reluctant to support individual growers or cooperatives. When Northwest Fruit Exchange officials wrote to the Northern Pacific asking for assistance with its new advertising campaign, the railroad agreed to place advertisements at ticket offices, but it remained cautious about using the cooperative's fruit exclusively on its dining cars. "It is a matter of great importance to the railways that the apple industry be placed on a sound, conservative basis and handled in a way that will

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[15] Howard Elliott to Robert Jones, April 19, 1913, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

result in profits to the growers," wrote J.M. Hannaford, second vice president of the Northern Pacific. "For the railway company to pick out a particular brand and feature it either in their advertising or on their dining cars . . . would be criticized by those who did not belong to your association."[16] Refusal to become associated with a particular brand did not prevent railroads from advertising Washington apples in a more general fashion.

Those involved in the apple industry realized the need for new and innovative advertising, but the development and implementation of national marketing campaigns required cooperation. While cooperatives were instrumental for improving distribution and standardizing grades, they were also key in organizing coordinated advertising campaigns. Individual districts and cooperatives continued to compete against each other to gain market recognition and supremacy, and by the 1910s, Wenatchee and Yakima had emerged as the preeminent growing districts in the state. These two rivals used every advertising tactic at their disposal to compete for shares in eastern and foreign markets. In a letter to the Yakima Commercial Club, grower J.C. Roth wrote:

> Many of us remember the methods used by our old friend P.T. Barnum whose skill in "transferring" half dollars made him famous. He believed in advertising <u>continually</u> at it, in the newspapers and on the bill boards his persistent and consistent methods are well remembered and were decidedly effective. Advertising a Circus and advertising apples require somewhat different means, but we can and should advertise our apples in the same persistent manner as do our friends in Wenatchee.[17]

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[16] J.M. Hannaford to W.F. Gwin, June 24, 1913, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

[17] J.C. Roth to R.A. Jennings, March 7, 1913. Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

By the early twentieth century, Roth, like many other businessmen, had come to believe that the persistent and at times outrageous marketing methods of used by P.T Barnum could help improve the sales of their own product. Like other manufacturers at the time, the apple industry focused on distributing a product of consistent and reliable quality that consumers would learn to trust. To gain consumer recognition and loyalty, they turned to the same marketing strategies that had made Crisco a success: free samples, recipe booklets, print ads, public displays, and branding.

Continuous advertising, through the use of catchy slogans, moving picture slides, billboards, advertisements in metropolitan newspapers, and plays featuring "apple cookery," helped to keep Washington apples in the consumer spotlight. Groups such as the Northwest Fruit Exchange and the International Apple Shippers' Association created publicity for Northwest apples through new marketing strategies, and they advocated the adoption of advertising strategies used by successful companies such as Coca Cola. Some strategies were simple; the Washington Fruit Company, for example, designed a special poster to be included with each box of apples the company shipped.[18] Others were more complex, such as the coordinated $10,000 campaign of newspaper ads and window displays proposed by the Northwest Fruit Exchange in 1913. Like Crisco, the exchange chose Duluth, St. Paul, and Minneapolis as a testing ground before moving to a national

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[18] W.W. Butler to Thomas Cooper, May 24, 1911, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

campaign, and they asked the Northern Pacific to feature their apples exclusively on its dining cars.[19]

One method to establish direct contact with retailers and ensure their cooperation was to send letters and free samples to buyers. In 1912, for example, the International Apple Shippers' Association, with donations solicited from seventy apple firms, distributed 20,000 posters to prospective retailers. In addition, letters were mailed to 13,000 retailers asking them to support the apple industry by keeping prices low, thereby encouraging a large volume of sales. Of these 13,000 establishments, 1,400 replied with a pledge of support. As an example of retailers' new found enthusiasm, the association reported that one grocer in Philadelphia began offering apples at a lower price, and as a regular grocery item rather than as an exotic specialty. Much to the grocer's surprise, sales jumped from three-to-five boxes per day to fifty boxes per day, which greatly increased his profits.[20]

Consumer education was an important part the industry's advertising efforts.[21] Recipe booklets were an effective way to create interest by encouraging women to try

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[19] W.F. Gwin to Howard Elliott, June 13, 1913, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

[20] Border, "Co-operation in Advertising the Apple," 16, 19.

[21] Many different fruit cooperatives used recipe booklets or print advertisements that included recipes as a way to market fruit. Less common fruits benefited the most from this kind of advertising because consumers were often unfamiliar with the fruit and its uses. Cranberry growers, for example, found advertising to be highly. Despite sugar shortages caused by World War I, sales remained strong because consumers were given recipes for cranberry dishes that used small amounts of sugar. United States Department of Agriculture, *Sales Methods on Policies of a Growers' National Marketing Agency*, Bulletin No. 1109 (Washington, DC: Government Printing Office,1923), 14-20.

new varieties of apples. Booklets were published by all of the major railroads, the fruit exchanges, and others involved in promoting the industry. One booklet, for example, distributed by the Union Pacific, provided 150 recipes for apple dishes including cakes, salads, jellies, marmalades, pies, and puddings. They represented the best recipes submitted by Northwest cooks, and they demonstrated the "plain, simple and practical, and . . . pleasing variety of forms in which the 'King of Fruits' may be served."[22] In addition to recipes, the booklet also included detailed descriptions and uses for different varieties, nutritional information, and an informative article on the production of Northwest apples.

Another booklet, *Two Hundred and Nine Ways of Preparing the Apple* by L. Gertrude Mackay, acting head of Domestic Economy at Washington State College, was republished by the International Apple Shippers' Association in 1912 as part of its campaign to enlist the cooperation of retailers. An estimated half a million copies were printed and distributed to customers through retail outlets. [23] The message of these booklets, which ranged at times from subtle to explicit, was that Northwest-grown apples were the most nutritious and flavorful fruits on the market. Mackay's booklet did not

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[22] Union Pacific, *150 Recipes for Apple Dishes*, (N.p., 1924). Author's collection.

[23] Both U. Grant Border and H.E. Shepard mentioned this book in their addresses to the International Apple Shippers' Convention in 1913. Border credited the book to a "Miss Mackey" of Washington State College in Pullman. Another version with many of the same recipes was republished in 1918 under the title *Housekeeper's Apple Book*. Published while Mackay was instructor of Domestic Economy at Schenley High School in Pittsburgh, Pennsylvania, the revised version contained more information on the nutritional value of the apple than the 1913 edition. Border, "Co-operation in Advertising the Apple":16; H.E. Shepard, "The Northwest Fruit Industry," *Better Fruit* 8, no. 5 (November 1913): 15; L. Gertrude Mackay, *The Housekeeper's Apple Book: Over Two Hundred Ways of Preparing the Apple* (Boston: Little, Brown and Company, 1918).

specifically mention Northwest apples, but it provided several creative suggestions for using the fruit. Some recipes, such as apple cobblers, apple fritters, or apple dumplings, were widely known in most American households. Other recipes offered a flare for the gourmet or exotic. Delmonico Apples, presumably named after Delmonico's, a New York restaurant that was America's most famous and well-known in the late nineteenth century, called for a layer of applesauce sprinkled with ground almonds, butter, and crushed macaroons to be baked and served as a side dish with meat. Another recipe that hinted at high class was Apples à la Parisienne: cooked apple halves placed on orange juice soaked sponge cake and covered with meringue.[24]

Recipe booklets, more than any other form of advertisements, highlighted the nutritional properties of the apple. These booklets, and food advertising more generally, targeted women by emphasizing their roles within the home and their responsibility to provide a healthful and safe environment for their families. In her study of twentieth century advertising, historian Katherine Parkin found that although advertising evolved over time, the messages sent to women remained the same: not only were women responsible for feeding their families nutritious food, they also had to please their husbands and children. Food was a way of showing love.[25]

To the scientifically minded home economists, food was something to be analyzed for its nutritional properties. A mother who loved her family needed to be more

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[24] L. Gertrude Mackay, *Two Hundred and Nine Ways of Preparing the Apple* (Spokane: Shaw and Borden, c. 1912) 14, 22.

[25] Katherine J. Parkin, *Food is Love: Advertising and Gender Roles in Modern America* (Philadelphia: University of Pennsylvania Press, 2006), 10-11.

than a good cook, she needed to be able to provide a nutritionally balanced diet, which in the early twentieth century meant she needed to be part chemist and part mathematician to understand the complex nutritional charts produced by home economists. Nonetheless, home economists attempted to overhaul the eating habits of the entire nation. In the introduction to her book, Mackay admonished those who viewed apples as a "luxury"; apples, she argued, provided essential minerals and had medicinal qualities that sustained mental and physical health.[26] Fresh produce was a small portion of American's diets in the late nineteenth because technology did not exist to transport or store fruits and vegetables. Potatoes, cabbage, and the occasional apple were the only produce most families consumed on a regular basis because these foods could be stored for a long time. Apples were the fruit of preference because they were widely available, and they had long been revered for their healthful properties.[27]

In the early 1900s, nutritional science was in its infancy. Some of the first chemical analyses of common foods in the American diet were completed in the 1890s, and scientists had only rudimentary knowledge of fats, carbohydrates, and proteins. Home economists and fruit advertisers alike latched on to new advances in food science and used them to promote the consumption of fruit and vegetables. At first, the emphasis was on these known nutritional building blocks. W.O. Atwater, professor of Chemistry at Wesleyan University in Connecticut, created nutritional tables, published by the Department of Agriculture, that showed the breakdown of carbohydrates, fats, and

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[26] Mackay, *The Housekeeper's Apple Book*, 1-3.

[27] Levenstein, *Revolution at the Table*, 24-25.

proteins of all known foods, and these tables served as basic reference for home economists across the nation. Atwater placed a strong emphasis on proteins, and he and other home economists continued to see fruit and vegetables as luxury items unnecessary for daily consumption until the discovery of other nutritional components in the 1910s and 1920s. But, as historian Laura Shapiro writes "they admired the way fats and sugars packed a large number of calories into a small amount of food."[28] According to home economists at the turn of the century, fruit did not provide as much nutrition as meat, but its high carbohydrate content still made it a good source of food energy. Pamphlets and recipe booklets included tables on the nutritional composition of apples and lauded them as a good source of carbohydrates.

As scientists began to discover vitamins, amino acids, and other nutritional building blocks in the 1910s and 1920s, this information was incorporated into promotional literature and print ads. One pitch popular with fruit advertisers in the 1920s was that acidic fruits such as oranges, lemons, and apples, could prevent a condition known as "acidosis," a condition characterized by lethargy and general malaise. According to advertisers, eating acidic fruit produced alkalines in the body, thereby restoring natural balance and health.[29] One apple recipe booklet touted the organic acids in apple as being beneficial for maintaining "balance," thus "overcoming constipation and intestinal putrification." The booklet did not specifically mention acidosis, but the ability of acids to remove "poisonous products" from the blood and to "counteract

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[28] Laura Shapiro, *Perfection Salad: Women and Cooking at the Turn of the Century* (New York: Modern Library, 2001), 71-72.

[29] Levenstein, *Revolution at the Table*, 153-54.

acidity" was a pitch against acidosis.[30] Acidosis is a real medical condition that can be caused by a variety of factors such as kidney failure, liver failure, diabetes, or drug overdoses, none of which can be cured by eating fruit. The fact that it was not a common condition did not stop advertisers from using it as an example of how the nutritional properties of apples could improve health.

Apples were known for their medicinal as well as their nutritional properties. One of the earliest slogans adopted by the industry was the familiar "An apple a day keeps the doctor away."[31] An early Skookum ad showed a young boy, grinning widely and greedily clutching an apple. The copy stated, "This youngster is happy. He's healthy too. 'An apple a day keeps the doctor away.'" The ad implied that the boy was healthy because he was eating Skookum apples. "His mother said 'SKOOKUM' to the grocer, and now he says 'SKOOKUM' which is Indian for 'Bully.'" The youngster was not eating any ordinary apple; he was eating an apple imbued with all of the health and strength of the Northwest. The implication was that this apple provided more nutritional punch than an ordinary apple. Apples were not only good for growing children; advertisers also praised their ability to prevent tooth decay.

While advertising in the early twentieth century began to speak more directly to consumers by appealing to their concerns about health or family, another major development was the use of brands to create instant product recognition in an

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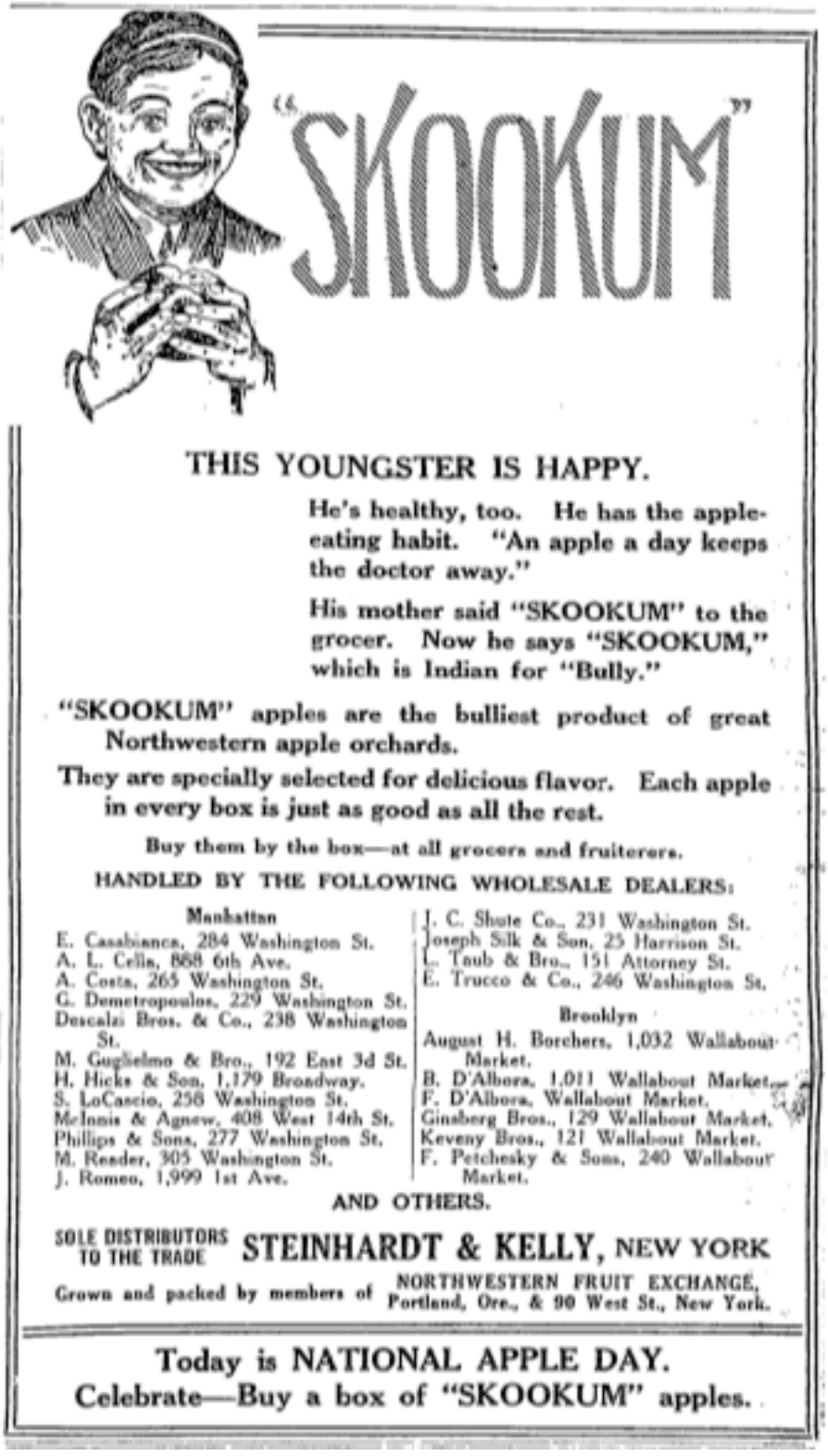
[30] Union Pacific, *150 Recipes for Apple Dishes*, 5-6.

[31] According to the Oxford Dictionary of Proverbs, the earliest documented use of this saying dates to 1866 from Pembrokeshire in southwest Wales in a slightly different form: "Eat an apple on going to bed, And you'll keep the doctor from earning his bread." This evolved into "An apple a day keeps the doctor away."



"SKOOKUM"

THIS YOUNGSTER IS HAPPY.

He's healthy, too. He has the apple-eating habit. "An apple a day keeps the doctor away."

His mother said "SKOOKUM" to the grocer. Now he says "SKOOKUM," which is Indian for "Bully."

"SKOOKUM" apples are the bulliest product of great Northwestern apple orchards.

They are specially selected for delicious flavor. Each apple in every box is just as good as all the rest.

Buy them by the box—at all grocers and fruiterers.

HANDLED BY THE FOLLOWING WHOLESALE DEALERS:

Manhattan

E. Casabianca, 284 Washington St.
A. L. Cella, 868 6th Ave.
A. Costa, 265 Washington St.
G. Demetropoulos, 229 Washington St.
Descalzi Bros. & Co., 238 Washington St.
M. Guglielmo & Bro., 192 East 3d St.
H. Hicks & Son, 1,179 Broadway.
S. LoCascio, 258 Washington St.
McInnis & Agnew, 408 West 14th St.
Phillips & Sons, 277 Washington St.
M. Reader, 305 Washington St.
J. Romeo, 1,999 1st Ave.
J. C. Shute Co., 231 Washington St.
Joseph Silk & Son, 25 Harrison St.
L. Taub & Bro., 151 Attorney St.
E. Trucco & Co., 246 Washington St.

Brooklyn

August H. Borchers, 1,032 Wallabout Market.
B. D'Albora, 1,011 Wallabout Market.
F. D'Albora, Wallabout Market.
Ginsberg Bros., 129 Wallabout Market.
Keveny Bros., 121 Wallabout Market.
F. Petchesky & Sons, 240 Wallabout Market.

AND OTHERS.

SOLE DISTRIBUTORS TO THE TRADE **STEINHARDT & KELLY**, NEW YORK

Grown and packed by members of NORTHWESTERN FRUIT EXCHANGE, Portland, Ore., & 90 West St., New York.

Today is NATIONAL APPLE DAY.
Celebrate—Buy a box of "SKOOKUM" apples.

Figure 1: Early Skookum advertisement. *New York Times*, October 20, 1914.

increasingly competitive marketplace. Improved transportation and the growth of large, national corporations meant that goods were less likely to be manufactured and consumed within limited geographic region. Consumers were often unfamiliar with new products, and at a time when the government did little to regulate consumer goods, they had little to go on other than the good name of a manufacturer's brand. As Melvin Thomas Copeland of the Harvard Business School wrote in 1924, "the ownership of a brand carries with it the responsibility for the quality of the product and the burden of aggressive merchandising, as well as control of patronage for that brand."[32] Because loyal customers meant repeat sales, manufacturers tried to assuage customer's fears and assure their loyalty by producing recognizable, dependable products. At a time when manufactures' products were notoriously unpredictable, brands such as Ivory Soap, Campbell's Soup, and Heinz ketchup came to be associated with a high level of purity, dependability, and quality.

The exact origin of branding is unknown; undoubtedly it started with the simple connection between a trusted merchant and his wares. While retailers and manufacturers made extensive use of branding in the nineteenth century, growers and manufacturers did little to advertise grocery products until the 1890s. Instead, manufacturers focused their energy on developing strong connections with wholesalers and retailers. It was up to the

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[32] William Applebaum, "Perspectives on Food Manufacturers' and Distributors' Brands in the United States," in *Brand Strategy in United States Food Marketing*, ed. Division of Research, Graduate School Business Administration (Boston: Harvard University Press, 1967), 3.

retailers to connect with consumers.[33] Until the 1890s, this strategy was successful. Many foods such as fruits, vegetables, meat, and dairy products were consumed within a short distance of where they were produced. As improved transportation made it possible to move these goods across the country, manufacturers had to find new ways to dispose of these highly perishable products. Established methods of wholesale marketing could no longer meet the demands of the marketplace. Consumers had to be convinced to spend more money for imported west coast fruit, even though perfectly acceptable, and less expensive, east coast varieties were widely available.

In addition to gaining the trust of consumers, companies used branded characters to serve as the voice of their product. Today, consumers are familiar with a number of these characters such as Tony the Tiger or Aunt Jemima. The very mention of these characters invokes the product, without the mentioning the product at all. Characters such as these evolved from comic strips, which first became popular in the late 1890s. Working for Joseph Pulizer's newspaper, the *World*, Richard Outcault created one of the first copyrighted comic character, the Yellow Kid. While comics existed long before Outcault, no one had created a recognizable, serialized character that gained such popularity. Realizing the monetary potential of his character, Outcault attempted to have the Yellow Kid copyrighted. Unfortunately, the courts ruled that only the name could be copyrighted because there was no precedent for copyrighting a drawing. Without exclusive rights to this character, Outcault stopped drawing the Yellow Kid in 1898. By

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[33] Ibid., 4-5.

this time, many people had imitated the character and used it to promote a variety of products from chewing gum to ladies fans.[34]

Outcault understood the marketing potential of a character like the Yellow Kid, and he determined to retain full rights over his future work. In 1902, Outcault hit upon another winning combination: Buster Brown. While the Yellow Kid had a narrow, urban appeal, Buster Brown was solidly middle class and became instantly popular. The format of the stories was simple. Every week Buster, in a sailor suit and angelic curls, and his dog Tige found their way into some kind of innocent mischief. Each panel ended with a resolution from Buster in which he contemplated his actions. Buster Brown was an instant success, and by 1908, the comic appeared in at least twenty-four newspapers nationwide.[35]

Buster Brown's broad appeal made him a much sought after image for advertisers. At the St. Louis World's Fair in 1904, Outcault sold the rights to Buster Brown to several manufacturers, including Oucault's most famous client, the Brown Shoe Company whose Buster Brown shoes can still be purchased today. The U.S. Copyright office in the Library of Congress recorded over 10,000 individual copyright applications for products using the Buster Brown brand.[36] Ultimately, Outcault found more success with advertising than in the comic business, and he opened an advertising agency in Chicago, which was taken over by his son after his death.

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[34] Ian Gordon, *Comic Strips and Consumer Culture 1890-1945* (Washington, DC: Smithsonian Institution Press, 1998), 32. The Yellow Kid was not used to market apples.

[35] Ibid., 48.

[36] Ibid., 55.

Historian Ian Gordon argues that comic strips were a critical step toward brand marketing because they "lent themselves to advertising strategies that offered goods and services as a means of constructing identity and framed those messages as morality tales."[37] In other words, comics provided a perfect vehicle for marketing goods because the American public was already familiar with the comic strip format. Comic strip characters were easily recognizable, but because of the distance between the reader and the character, it was not jarring for readers to see characters out of the context of the actual comic strip. In many ways, advertisements simply became extensions of the comic strips themselves. Buster Brown was perhaps the first major example of how the line between entertainment and business could be blurred for marketing purposes. Licensed Buster Brown ads contained the same recognizable characters from the comic strip, often in poses that would be familiar to readers of the strip. Advertisements commissioned for the Wenatchee-Columbia Fruit Company are a typical example of this type of advertising.

Buster Brown was so popular and widely recognizable that it was adopted by the Wenatchee-Columbia Fruit Company in 1912. According to the Wenatchee *World*, Outcault and his son agreed not only to market apples under the Buster Brown name, but they also proposed to help sell 100 carloads of fruit. Over the fall of 1912, the paper issued several calls to local growers to bring their best apples to Wenatchee-Columbia for shipment and sale under the Buster Brown label. Only the best apples were accepted, "in view of the fact that the apples of these hundred carloads are to give eastern people their

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[37] Ibid., 10-11.

first conception of Buster Brown quality as applied to apples."[38] Anything other than extra fancy apples was rejected.

Ads for the apples that appeared in the *Wenatchee Daily World* throughout the fall of 1912 mimicked the final "resolution" panels that were a signature of the Buster Brown strip. The first advertisement read:

> Resolved: That I am sharpening my pencil to book orders for 100 carloads of the finest Wenatchee apples. I want them so I can give a few of my friends in my home town of New York just one little "taste." My friends in New York don't know much about Wenatchee apples yet but they will before Tige and I get through with them.[39]

The advertisements contained many hallmarks of the comic strip. Buster appeared with his sidekick, Tige the dog. Typically, Buster's resolves were not apologetic, despite his naughty deeds. Rather, Outcault used these panels to provide social commentary or to give Buster an opportunity to defend his good intentions and muse on future plans. Similar to the comic strip resolves, in the advertisement, Buster resolved to "fix" the problem – in this case a New Yorker's unfamiliarity with Wenatchee apples. In contrast to advertisements that would have appeared for eastern consumers, the ads in the *Wenatchee Daily World* were designed to build grower confidence in the modern marketing methods.

While the Wenatchee-Columbia Fruit Company attached itself to an already nationally recognized brand, growers associations in the Northwest began to create their own brands. The most important was the Skookum brand, adopted by the Northwest Fruit

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[38] *Wenatchee Daily World*, September 20, 1912.

[39] Ibid.

Exchange in 1914. The exchange ran a national ad campaign that featured advertisements in publications such as *Good Housekeeping*, the *Saturday Evening Post*, and the *New York Times*.[40] The image created by brands was important. Initially, the Skookum brand used a totem pole to evoke the Pacific Northwest, but in 1916 the exchange changed its logo to a smiling cartoon Indian. According to the exchange, "the word 'Skookum,' belonging to the Indian jargon, is a word expressing 'Quality is the best.'"[41] In the wake of the Alaskan gold rush, Northwest and Alaskan imagery and the Chinook jargon became popular with Americans. The *New York Times*, for example, carried several advertisements for novels that featured rugged outdoorsmen pitted against the Pacific Northwest wilderness, such as "Skookum Chuck," a man looking for adventure.[42] The word "Skookum" and the use of the Indian logo implied that these were not ordinary apples. They were from a rugged, exotic place, and they could provide consumers with strength and vigor. One early Skookum ad featured a picture of a man that resembled Theodore Roosevelt with the slogan "Skookum . . . It means 'bully' in Indian."[43] Early ads, prior to the adoption of the cartoon Indian, featured a young boy, a woman, or an American Indian eating Skookum apples. The word "bully" was used in several of these ads featuring slogans such as "she can't speak Indian, but she knows what 'Skookum'

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[40] The Northwest Fruit Exchange spent an estimated $70,000 to $100,000 per year on advertising. Joseph Waldo Ellison, "Cooperative Movement in the Oregon Apple Industry," *Agricultural History* 3, no. 2 (April 1939): 86-87.

[41] "About Fruit and Fruit People," *Better Fruit* 8, no. 5 (November 1913): 39.

[42] *New York Times*, October 11, 1925.

[43] Ibid., October 22, 1914.

means" and "Skookum apples are the bulliest product of the great Northwest apple orchards."[44]

By 1916, the Skookum brand had become so successful that Wenatchee orchardists formed a new organization, the Skookum Packers' Association, to regulate the trademark. The Northwest Fruit Exchange remained the exclusive distributor of the apples, but control of the brand shifted to the new organization. Although growers were connected to the Packers' Association, they retained some autonomy. The newly designed labels prominently features the Skookum logo, but left room in the lower left corner for growers to add their own labels designating their individual orchards.[45] Other brands developed, such as "Blue Goose" and "Big Y" apples in Yakima, and "Jim Hill" apples in Wenatchee, but these brands were advertised on a much smaller scale than Skookum.

Washington growers were not only competing against eastern growers, they were competing against each other. Despite attempts to create a centralized marketing system, the various associations, cooperatives, growing regions, and individual growers remained at odds with each other. As the industry grew and the volume of yearly crops increased, Yakima and Wenatchee vied for the title of "Apple Capital" of the state, and later the nation. Even more important than branding was the regional recognition attached to a

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[44] Ibid., October 19-21, 1914.

[45] John Fahey, *The Inland Empire: Unfolding Years, 1879-1929* (Seattle: University of Washington Press, 1986), 114; John Baule, "The Amazing Saga of the Skookum Logo," *Good Fruit Grower Magazine* 58, no. 7 (April 2007): http://www.goodfruit.com/issues.php?article=1462&issue=53 (accessed January 12, 2009).

Figure 2: Early Skookum advertisement. *New York Times*, October 22, 1914.

Figure 3: Skookum advertisement after the adoption of cartoon Indian logo. *New York Times*, October 17, 1916.

brand like Skookum. If consumers identified such apples with Washington, all growers could benefit, but more often, consumers identified with a specific region, which could affect the sales of other regions within the state. Although Wenatchee grew other fruit besides apples, most notably pears and peaches, from the beginning, apples were the dominant crop. Yakima, on the other hand, grew a wide variety of fruit. While apples were the leading crop, they did not outrank other crops as apples did in Wenatchee. This gave Wenatchee growers a greater advantage in creating regional and brand recognition. Whereas Yakima growers focused on marketing their pears, plums, peaches, and cherries, along with their apples, Wenatchee growers focused solely on marketing and improving

the quality of their apples. In 1912, the Wenatchee Commercial Club hired a sales manager and proposed making the "Big Red Apple" a Wenatchee trademark that could be used exclusively by growers in the valley.[46]

The impact of Wenatchee's aggressive sales techniques can be seen in a 1914 study of market standing and reputation of Wenatchee and Yakima apples completed by the Northern Pacific. Wenatchee apples were favored in Seattle and all other cities on the Puget Sound, not surprising given that all of these towns were on the Great Northern's line. Likewise, Yakima apples were favored in Butte and Helena, Montana, and Jameston, North Dakota, all of which were served by the Northern Pacific. In New York City, Pittsburgh, Cleveland, and Detroit, buyers showed no preference for either apple. Wenatchee apples were clearly favored in St. Louis, San Francisco, Cincinnati, Philadelphia, Milwaukee, Duluth, Billings, and Kansas City. Boston and Winnipeg were the only cities surveyed that had a clear preference for Yakima apples. Buyers favored Wenatchee apples for several reasons. First, Wenatchee apples were known for their consistent high quality. "Wholesalers advise that they can always depend on good stock from Wenatchee while occasionally a portion of the Yakima stock is poor," the study noted. Second, Wenatchee had an active sales presence in these cities that continually worked to find new buyers. "The Yakima fruit shippers are simply supplying a demand," reported a St. Louis buyer, "while the Wenatchee are continually creating one." Finally,

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[46] "Use Big Red Apple as Wenatchee Trademark," *Wenatchee Daily World,* October 4, 1912.

Wenatchee had a more aggressive advertising campaign in these cities.[47] While this study was no doubt a blow to Yakima growers, "these reports confirm our previous impression that the Wenatchee people," wrote J.M. Hannaford, "having nothing else to market, have specialized in the packing and marketing of apples to a greater extent than the Yakima Valley people."[48]

While growers targeted consumers in eastern population centers, from the early years of the industry, they marketed their fruit internationally. The Northwest was no stranger to export trade with foreign markets. From the earliest European contact in the late 1700s, Northwest goods had been traded throughout the globe – initially furs, then timber, wheat, and ores. Refrigerated railroad cars and steamships made it possible for fruit to be shipped internationally as well. The international market presented many of the same challenges as domestic markets: high transportation costs, reliance upon third party sales agents, lack of marketing infrastructure, and competition from other exporting nations. Growers had to study the markets, learn what varieties consumers preferred, establish connections with wholesalers, and convince consumers that Washington apples were superior to other apples, just as they had to do in the United States.

Initially, apples were exported upon the request of American or foreign government officials who wished to give the apples as gifts after encountering them at one of the many exhibitions and fairs, or by Americans living abroad who had personal

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[47] "Synopsis of Agents' reports relative to market standing and reputation of Wenatchee and Yakima Valley Apples," February 1914, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

[48] J.M. Hannaford to C.C. Burdick, March 25, 1914, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

ties to growers in the Northwest. As apples traveled to far corners of the globe, *Better Fruit* and local Washington newspapers reported on these small orders as hopeful evidence of a growing international market. In 1907, the Chinese minister at Washington, DC, requested that ten boxes of Jonathans, Yellow Newtowns, Spitzenbergs, Bellflowers, and Baldwins be shipped to Bejing for an exhibition by the Chinese government.[49] The same year, *Better Fruit* reported another carload of fruit shipped to Vladivostok.[50] By 1910, regular shipments of apples were bound for Australia, Canada, Great Britain, and various points in Europe, and markets in Asia, Africa, and South America were being explored for their potential. For example, the first shipment of Northwest apples was sent to South Africa by P.J. Jonas of Portland, who had a brother serving as a missionary in the Orange Free State. *Better Fruit* reported that the apples were "received in fine condition" despite the long voyage, and hoped that this shipment might lead to the opening of new markets, even if the fruit was "a little too high priced for the dusky inhabitants of that quarter of the globe."[51]

Given the high shipping costs associated with foreign apple exports, growers had to be even more vigilant in their packing and in the choice of fruit to ship. Many of the nations targeted for the export market had thriving apple industries and an abundance of fruit in most years. With the exception of Australia, whose growing season complimented

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[49] *Better Fruit* 2, no. 6 (December 1907): 17.

[50] "Doings of Fruit Growers of the Pacific Northwest," *Better Fruit* 1, no. 9 (March 1907): 14.

[51] "Doings of Fruit Growers of the Northwest," *Better Fruit* 2, no. 11 (May 1908): 21.

that of American growers and helped create a year round demand, most American fruit faced strong competition. As with eastern U.S. markets, Northwest growers found that in general, the only fruit that could be successfully marketed overseas was that of the highest quality. There was a good market for fruit, as Fred Pritchard of Pritchard & Company Liverpool reported to *Better Fruit* readers, but it was "almost useless to ship anything but the very finest fruit abroad."[52]

From the beginning, Britain was a prime target for Northwest exports, despite the fact that Britain was developing a thriving commercial apple industry of its own. The amount of commercial acreage in Britain increased 64 percent from the 1873 to 1904.[53] Many hoped that locally-grown British fruit would dominate the market due to its superior freshness and quality; however, by the early 1900s, cheap foreign imports forced local growers to cut prices significantly in order to compete, leaving farmers with little to no profit. "Whatever increase in the consumption of fruit may take place, foreign producers will have their share of the trade," reported the British *Economic Journal* in 1905. "Much of their fruit is ripe before that which is grown in this country, enabling them, as home growers complain, to 'take the cream off the market.'"[54] The importation of apples was part of a larger trend in Britain. By 1911, 14.2% of Britain's food supply

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[52] "Doings of Fruit Growers of the Pacific Northwest," *Better Fruit* 1, no. 7 (January 1907): 22.

[53] According to Bear, total commercial acreage in Britain was 148,221 in 1873, and 243,008 in 1904. He estimates that the acreage in 1904 was nearly double the stated figure if private gardens had been included. William E. Bear "The Fruit Industry of Great Britain," *The Economic Journal* 15, no. 59 (September 1905): 427-428.

[54] Ibid., 428.

came from the United States. Apples from Canada and the United States were the most imported and consumed fruit, followed by oranges and bananas.[55] In addition to the untimely availability of foreign fruit, British producers, like their American counterparts, also had to deal with an inadequate distribution and marketing system. Fruit growers preferred to sell their fruit themselves, or to local shopkeepers in small quantities. The small scale of these operations dictated a high price in order for growers to recoup their expenses. High prices created an artificial glut of local apples, and they encouraged consumers to purchase imported fruit or fruit of inferior quality. Like American growers, British growers were initially suspicious of selling large consignments to commission men who operated in large cities because they feared the possibility of fraud. While good quality fruit could be obtained directly from growers, most middle class Brits did not go to market. Instead, their food was delivered to their door by greengrocers. Between retailers, salesmen, and railway companies, growers only received an estimated one-third of the cost actually paid by consumers. By 1905, British growers began discussing the idea of forming co-operative associations to protect their mutual interests and regulate the commercial trade, but imported apples had already become popular with consumers.[56]

British consumers favored American fruit for reasons other than its price. Initially, fruit imported from the Pacific Northwest or California was more expensive than locally grown fruit, but American growers cultivated a strong reputation for quality.

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[55] Canada and Australia exported fruit to Great Britain as well. R.H. Rew "The Nation's Food Supply," *Journal of the Royal Statistical Society* 76, no. 1 (December 1912): 100.

[56] Bear "The Fruit Industry of Great Britain," 429-430.

In the early 1900s, American growers had established connections in Glasgow, Liverpool, and London, and apples sold in Britain could fetch $5 to $6 per box. The British favored less expensive Newtowns over the pricier Spitzenbergs because of "custom and tradition" and, of course, cultural taste preferences. "The Newtown has been coming to England for a great many years and was sent there by apple-raisers in Virginia when it was an English colony," reported *Better Fruit*. "The native son of Britain likes a hard, crisp apple. In the Newtown he has it." British consumers also liked to use apples for table decorations and preferred the American Newtowns to their own domestic fruit because the Newtowns lasted longer and were more "brilliantly colored." In fact, these apples were such a luxury that many British households rented apples to display as centerpieces when entertaining. This custom led to some uncomfortable situations for unknowing American visitors, but, as *Better Fruit* explained, a "true Briton . . . watches the hostess closely when [the fruit] is passed, and, if she refuses, knows that it is hired and not to be eaten."[57] Given the luxury nature of imported American apples, commission houses always tried to secure a large shipment in time for the Christmas holidays when many upper class Britons purchased boxes of apples to distribute as gifts.

While Britain was a prime target for American apple exports, it also served as a distribution point to other European destinations. Although American growers faced strong competition from Canadian and Australian growers, they also faced competition from European domestic markets. In its 1914 "Export Information Edition," *Better Fruit* informed its readers that marketing fruit in Italy or France was futile, since both nations

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[57] "Why Britishers Like the Newtown Pippin," *Better Fruit* 2, no. 2 (August 1907): 24.

produced much excellent fruit of their own. Apples had been well received in other nations, such as Austria-Hungary, Germany, and Denmark, where the Wenatchee brand was well-known, but such fruit was also in direct competition with fruit grown locally, making it profitable only to ship the highest quality fruit or to exploit the market when European crops had a bad year. Still, by the early 1930s, European growers had not developed the extensive commercial infrastructure seen in the Pacific Northwest. Agricultural economist O.C. Stine argued that while many European countries could produce enough apples to support their needs, Europe's rural peasant populations lacked the "initiative and foresight necessary to plan and develop the production of large volumes of high-quality apples for European industrial cities."[58] Lack of arable land prevented the proper expansion of the industry in some regions, but Stine placed most of the blame on the ineptitude of local farmers and their inability to form cooperative organizations to market their products.

Branding and name recognition was as important to international markets as with domestic ones, and the major growing regions of Washington state competed against each other for these lucrative markets. Aggressive advertising was critical to establishing a strong consumer base. Reports showed that Wenatchee apples were favored in Great Britain in the 1910s, and that consumers identified all Washington apples with Wenatchee, regardless of their origin.[59] Concerned that Yakima Valley apples were

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[58] O.C. Stine "What Agricultural Products Had We Best Export," *Journal of Farm Economics* 13, no. 1 (January 1931): 44-45.

[59] Howard Elliot to Judge George Reid, February 28, 1913, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

falling behind, Howard Elliott, president of the Northern Pacific Railway, wrote to agents in Yakima:

> For some reason, the Wenatchee Valley people have been able to impress the name and the quality of their fruit on the European market much better than have the Yakima Valley people. I am afraid that they are too slow in the Yakima Valley, and perhaps you can help to stir them up.[60]

Wenatchee growers had been more successful in advertising and promoting the quality of their fruit. In a letter to the Yakima Commercial Club, J.C. Roth of the Northern Pacific lamented the lack of consumer recognition. Even though carloads of Yakima fruit had been sold, "no one in Great Britain seems to realize where the fruit came from. If they do, they evidently think it is grown in Wenatchee." Roth believed that advertising was the solution to Yakima's marketing problem. "We can and should advertise our apples in the same persistent manner as do our friends in Wenatchee," he wrote, "We can do better than they."[61] Within a few months, Yakima agents reported to the Northern Pacific that they had interested foreign buyers. Elliott congratulated the growers on their success, offering that, "I have long believed that a market could be built up here in Europe if your people went after it the right way."[62]

Exports to England and Germany remained strong until the outbreak of World War I. The United States exported 2,667,873 barrels and 1,096,045 boxes of apples

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[60] Howard Elliott to Thomas Cooper, February 28, 1913, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

[61] J.C. Roth to R.A. Jennings, March 7, 1913, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

[62] Howard Elliott to Mr. Gilbert, June 4, 1913, Northern Pacific President's file, Box 137.E.19.5B, Minnesota Historical Society.

during the 1914-1915 growing season, but due to naval blockades and a shortage of cargo ships, few apples were exported during the war, despite requests from buyers in South America and Europe.[63] After the war, demand temporarily increased, both at home and abroad, as embargoes were lifted. The year 1919 was one of the most prosperous years for the apple industry, but increased plantings during the 1920s pushed the U.S. and global market for apples toward saturation. Growers faced competition from other popular fruits such as bananas, grapefruit, and oranges, and new advertising campaigns were undertaken to "keep king apple on the throne."[64] Efforts were made to implement a statewide advertising policy, but internal competition and jealousies prevented this plan from getting off the ground. Individual districts mounted their own advertising campaign. In the 1920s, Wenatchee started a massive advertising campaign with the slogan "Eat Wenatchee Apples." These ads featured large drawings of apples, maps of central Washington, and charts indicating when each variety was in season. They advertised Wenatchee's optimal natural environment for growing apples: "warm and sunny" days, "clear and cold" nights, rich soil, and "water from mountain brooks." They also emphasized the efficient, scientific aspect of growing fine apples at a low cost. "Try these," one ad beckoned, "to know what good apples are."[65]

Although several attempts were made to initiate a state-wide advertising commission that would speak for all Washington growers, this was not accomplished

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[63] Although the number of boxes shipped by Washington is unknown, all boxed apples were from western growing districts.

[64] Ellison, "Cooperative Movement in the Apple Industry," 87 -90.

[65] *New York Times,* October 19, 1923.

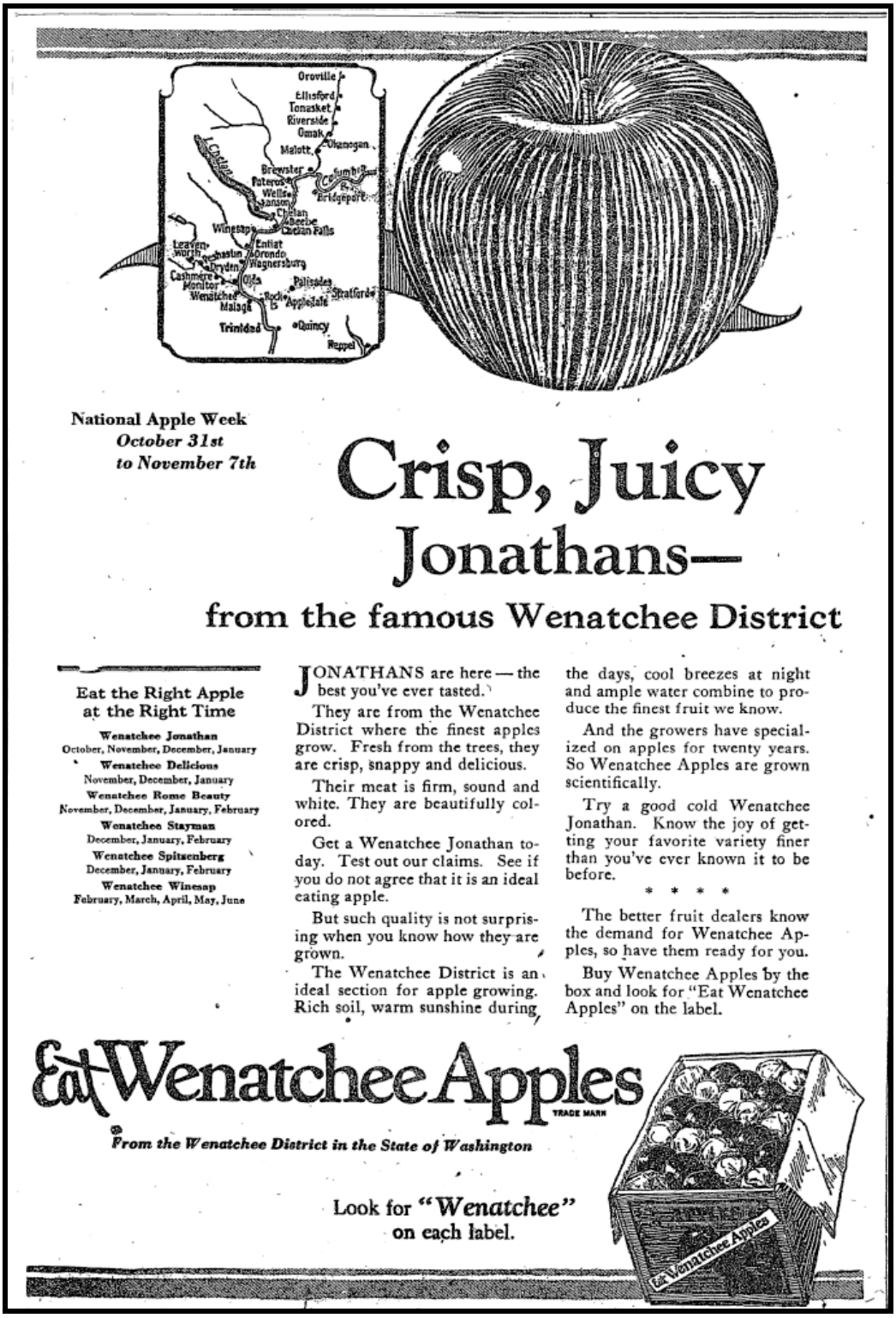

Figure 4: Advertisement from "Eat Wenatchee Apples" campaign. *New York Times*, October 12, 1923.

until the 1930s when the industry nearly collapsed because of the Great Depression.[66] Growers understood the importance of cooperation in advertising, and they attempted to form organizations based on the Sunkist and Sunmaid trademarks of the California citrus and raisin industries. But ultimately they were unwilling to fully commit to such an organization. In good years, growers remained confident that their fruit would sell itself, and they were reluctant to decrease their net profits by relying on another middleman. In bad years, they resumed discussions about the formation of marketing cooperatives. Historian Joseph Ellison blamed the growers' failure on a number of factors including "insufficient capital, hasty action, mismanagement, jealousy among growers, and hostile, malevolent propaganda by private firms." He also claimed that farmers were also at fault for their excessive independence and chronic mistrust of cooperative organizations.[67]

Despite the fact that growers failed to establish a permanent, cooperative marketing agency, they did successfully employ modern advertising methods, thereby increasing their share of the market. In 1910, Washington produced only 5.8 million bushels of apples. By 1921 this had increased five-fold, to 25 million bushels. In 1930,

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[66] The Washington State Apple Commission was formed in 1937 by an act of the Washington State Legislature to promote education, advertising, and market development. While it is a state mandated program, it has always been funded entirely by growers. Washington State Apple Commission, "About the Washington Apple Commission," http://www.bestapples.com/about/about_applecommission.shtml (accessed February 27, 2009).

[67] Ellison, "Cooperative Movement in Apple Industry," 96.

the crop peaked at 37.8 million bushels.[68] Business historian Richard Tedlow writes that "to create and organize mass markets, firms had to move away from the conventional marketing system and toward managerial coordination."[69] Raw material suppliers, producers, wholesalers, retailers, and consumers were tied together through vertical marketing systems. Complete vertical integration, where one corporation owns or controls all stages of the manufacturing process from raw materials to retail distribution, was not feasible for most companies. But vertical marketing systems could be organized through business contracts and advertising. Many companies such as Ford, Sears, Coca Cola, and Washington apple growers found that having established systems of transportation and production were not enough to sell a product. Instead, marketing required a creative vision that fostered consumer demand. Through advertising campaigns such as Skookum, Washington growers successfully increased their sales to match their output to become the leading apple-producing state in the nation.

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[68] E. L. Overholser, "Production and Marketing Problems of Apples in the State of New York and Washington Contrasted," (paper, Thirty-second Annual Meeting of the Washington Horticultural Society, Yakima, Washington, December 7-9, 1936), 87.

[69] Richard S. Tedlow, *New and Improved: The Story of Mass Marketing in America* (New York: Basic Books, Inc., 1990), 361

Conclusion

When buying is based on supply and demand,
And packing is done – the best in the land;
When sanity and sense your actions control,
The wheels of commerce will continually role;
Then it is wise to be an "Apple Man."

-- Emory C. Cook, "The Apple Man"

Throughout the 1920s, the apple was the king of fruits, but even in these peak years, there were signs that Washington producers would have to work hard to maintain their position as the nation's leading apple producer. Overproduction, competition from other fruit, adoption of scientific growing and packing methods by eastern growers, and the Great Depression in the 1930s took its toll on the industry. By the 1920s, the Washington apple industry had become a mature industry. The widespread experimentation that characterized the early years tapered off as growers began to heed expert advice. Spraying was widely accepted by the 1920s, although horticulturalists and entomologists continued to research orchard pests and diseases. Grading and packing standards became widely accepted as well, and growers continued to build upon the scientific growing methods and marketing techniques pioneered in the early decades of the industry.

In the 1920s, apples were the predominant fruit in Washington, accounting for 75 percent of all fruit trees in the state. From 1920 to 1950, however, the number of trees in production declined steadily. In 1920, there were 10,732,044 trees of bearing age in Washington. By 1930, there were only 9,136,000 trees in production, and by 1950, the state had only 6,241,000 bearing trees, comprising only 43 percent of all fruit trees in the

state.[1] While some of the decline can be attributed to the Great Depression, the number of trees in production had begun decreasing during the 1920s. Despite this decrease, production levels remained unchanged.[2] Instead, better fertilizers and chemical sprays increased yields, and older trees were replanted with new varieties that matured faster and produced more fruit. Growers who could not maintain a high standard of quality were forced out of business, and some of the most marginal land was taken out of production. Since the 1890s, experts had preached efficiency in the orchard, and by the 1920s, orchardists had become efficient at producing more fruit from fewer trees.

By the 1920s, growers were becoming concerned with competition from other fruits such as bananas, citrus fruits, and apples grown in other parts of the U.S. In 1926, 58,550,364 bunches of bananas were imported to the U.S., an estimated fifty-one bananas for every man, woman, and child in the country. The United Fruit Company sold more bananas than Washington growers sold apples. Between 1917 and 1926, Washington shipped an average of 103,822 carloads of apples to other U.S. markets, while an estimated 105,496 carloads of bananas entered the U.S. in 1926. With more bananas being sold than apples, one writer in *Better Fruit* questioned if the apple was still the "King of Fruits."[3] Washington fruit growers were not the only ones using large scale

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[1] Washington Crop and Livestock Reporting Service, *Washington Tree Fruits* (Seattle: Washington Crop and Livestock Reporting Service, 1952), 1-2

[2] The ten year average for production from 1920-1929 was 685,300 tons per year. The ten year average for 1930 to 1939 was 724,600 tons per year, and the ten year average for 1940-1949 was 683,500 tons per year. *Ibid*,. 17.

[3] The carload numbers for bananas were an estimated equivalent since bananas were shipped in steamships and measured in bunches or tons. Charles E. Durst, "Bananas as a Competitor of American Grown Fruit," *Better Fruit* 23, no. 1 (July 1928): 5. For

advertising campaigns to sell fruit. The California Fruit Exchange and the United Fruit Growers used print ads, recipe booklets, and other promotions to introduce consumers to their fruit. Ads touting the health benefits of fruit were common, and apple growers nationwide redoubled their advertising efforts. "To have raisin growers, orange growers and the corporation selling bananas giving health talks to the public," wrote the editor of *Better Fruit*, "while a better fruit than any one of them is given little publicity is not good business for the apple growers."[4]

During the 1910s and 1920s, Washington growers had experimented [with] new forms of advertising, such as the use of branded characters like the Skookum Indian. These advertising methods were successful, but keeping consumers' attention was an ongoing process. In 1928, the Bureau of Agricultural Economics, with the cooperation of the New York Food Marketing Research Council, surveyed 3,100 consumers in New York City. This poll found that most housewives identified apples only by color: red, green, or yellow. Almost fifteen years after the introduction of the first brands, the majority of consumers could not name a single favored brand. When pressed, one out of ten consumers named "Skookum," one out of 16 named "Blue Goose," and one out of twenty-five named "Hood River." These apples were from Wenatchee and Yakima, Washington, and Hood River, Oregon, respectively, although consumers could not name these regions. Surprisingly, African-American women were the most familiar with brand names, even though they did not purchase brand name apples. This was most likely

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more on the history of the banana industry see Dan Koeppel, *Banana: The Fate of the Fruit that Changed the World* (New York: Hudson Street Press, 2008).

[4] "Editorial Notes," *Better Fruit* 25, no. 1 (July 1930): 14.

because they, as household domestics, shopped for upper-class white households who demanded the finest produce.[5]

Although only 10 percent of consumers could name "Skookum," and even fewer could name another brand, the use of brands and trademarks was successful. There were hundreds of brand names used on the market, and the fact that New York consumers could name only Northwest brands was significant. A directory of shippers in a 1928 edition of *Better Fruit* listed 165 different carload shippers in Washington state using 210 different brand names.[6] This does not account for shipping companies based in places such as Chicago and New York, or brand names employed by growers in other parts of the country. With so many different brands competing for consumers' attention, only a few like Skookum, Blue Goose, and Big Y were able to gain widespread recognition.

By the 1920s, eastern growers had started to adopt western methods of grading, packing, and advertising in order to become more competitive. In 1927, Paul Stark of Stark Nurseries in Louisiana, Missouri, proposed a national "Apples for Health" campaign.[7] Stark planned to raise funds from growers and the railroads for a four-year, $4,000,000 campaign. While such efforts were intended to increase general apple consumption, western growers were reluctant to spend money on an advertising

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[5] Earl R. French, "Consumer Demand for Apples in New York City," *Better Fruit* 23, no. 2 (August 1928): 7-8.

[6] "Pacific Northwest Carlot Apple Shippers and their Brands," ibid., 26-28.

[7] Stark Nurseries were responsible for marketing the Delicious apple to growers. David C. Ferree, ed., *A History of Fruit Varieties: The American Pomological Society, One-Hundred and Fifty Years, 1848-1998*, (Yakima, WA: *Good Fruit Grower Magazine*, 1998), 1-2.

campaign that might not benefit them directly.[8] By the late 1930s, however, Washington growers were finally willing to overlook internal rivalries, and in 1937 they formed the Washington Apple Commission which assessed growers a fee of one cent per box for advertising and market research.[9]

The Depression had a significant impact on growers and forced many out of business. In the first years of economic hardships, growers remained extremely optimistic that sales would be strong. Nationwide, the 1929 apple crop was 20 percent smaller than the 1928 crop. In Yakima, for example, 2800 cars were shipped in November 1928, but only 1900 cars went out in November 1929, representing a 33 percent decrease.[10] The shortage of apples kept prices high for the 1929 crop, but by 1930, growers began to feel the pinch of the Depression. The 1930 crop was not particularly large, only 30.8 million barrels, two million barrels lower than the average for the previous five years. Other deciduous fruit crops were smaller than average, and usually in such an abnormal year, apple prices would have been fairly high. But high unemployment impacted consumption. "A much smaller part of the population than usual is able to buy just want it wants," wrote Charles Durst.[11] Low fruit and vegetable prices plagued growers across the nation.

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[8] Office of the President, Northern Pacific Railway, to B.O. Johnson, December 29, 1927, Northern Pacific President's File, Box #137.E.19.5B, Minnesota Historical Society.

[9] William A. Luce, *Washington State Fruit Industry . . . A Brief History* (N.p. [1972?]), 46.

[10] "The Apple Situation," *Better Fruit* 24, no. 6 (December 1929): 13.

[11] Charles E. Durst, "Apple Prices, High or Low?" *Better Fruit* 25, no. 4 (October 1930):14-15.

Growers had to take creative measures to market their fruit in 1930. The Washington Boxed Apple Bureau conceived the idea of having a national apple sale to move fruit. Newspapers in seventy-one cities across the nation advertised Jonathon apples. Over 100,000 window posters were distributed to 262 cities in 43 states.[12] The New York Apple Week committee, headed by Joseph Sicker, devised the unorthodox plan of letting unemployed men sell apples on the street.[13] The New York Police Department agreed to permit this practice without the usual vendors licenses. Five to six thousand unemployed men showed up every day to sell apples, and the police department had to be called in to maintain order so that the fruit could be distributed. Since the men had no money, they had to be trusted with the first box of apples; almost all returned to pay for the apples. While wholesalers in New York City had only been offering growers $1.75 per box, unemployed men brought them at an average of $2.25 per box, and during the first week they sold 4000 boxes of apples each day. Distributing apples in this fashion turned out to be such a success that Sicker decided to extend the promotion beyond the original week that had been planned. The men made "an immense amount of profit," Sicker wrote. "In addition to this, they have saved the apple market and are buying clothes, shoes, good, etc. and in their small sphere." Moreover, this innovative marketing

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[12] "Sell Apples . . . Apple Week," *Better Fruit* 25, no. 5 (November 1930): 5.

[13] Although this event was organized by the New York Apple Week committee, apples from across the nation were sold. At least one carload of Wenatchee apples and one of Yakima apples were sold during the first week of the promotion. "Selling Apple by Jobless" *Better Fruit* 25, no. 6 (December 1930): 11.

venue was "bringing about prosperity such as has never been shown in such a short time."[14]

As successful as Sicker's plan was, selling apples on street corners was not enough to save growers from the onslaught of the Depression. By the early 1930s, they faced decreased sales and, for the first time, recorded losses instead of profits. The American Fruit Growers, who owned the Blue Goose Brand, reported losses of $544,572 in 1932 and $416,422 in 1933. Losses were common throughout the industry as a result of falling commodity prices, but growers were quick to blame the railroads for their misfortunes. High freight rates, argued the American Fruit Growers, cut into profits. They believed that shipping charges, as well as gasoline, electricity, insurance, and taxes, were artificially high; freight rates reportedly accounted for 45 percent of the market value of apples.[15] Growers agitated to have freight rates reduced to their pre-World War I levels, but others in the industry believed that this was not at the root of growers' problems.[16] The shipping firm of Gwin, White & Prince reminded its customers of the current state of the industry:

> Call it underconsumption if you please; the effect is the same. Fact remains that we have continued to produce a high-cost, necessarily under-priced article of luxury on a scale geared to the nearly universal prosperity of the late 1920s in face of the fact that our potential luxury-market has been severely contracted by

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[14] Joseph Sicker to G.R. Merritt, November 24, 1930, Northern Pacific President's File, Box # 137.E.19.5B, Minnesota Historical Society.

[15] American Fruit Growers, "Thirteenth Annual Report to the Stockholders," June 30, 1933, Northern Pacific President's Files, # 1787-12, Minnesota Historical Society.

[16] The Interstate Commerce Commission held to the 1920 rates and ruled that, although freight rates were often "varying and inconsistent," rail freight charges had "been maintained on a low basis." John Fahey, *The Inland Empire: Unfolding Years, 1879-1929* (Seattle: University of Washington Press, 1986), 120-21.

> the loss of millions of former consumers, reduced by the depression to a state of financial impotence.[17]

The industry was being assaulted on several fronts: consumption was down, Washington growers faced competition from other parts of the country, and the market had reached a saturation point.

Nonetheless, it was easier for many to place the blame squarely on the railroads. For example, Rufus Woods, editor of the *Wenatchee Daily Word*, used his newspaper as a platform to criticize the railroads. Ralph Budd, president of the Chicago, Burlington, & Quincy Railroad, corresponded with Woods and urged him to see matters from the railroad's perspective. "I believe you know that the railroads are between the deep sea of poor net income if they cut their rates too much, and the devil of losing the business if they do not cut the rates," Budd explained. "I do not believe the quality of apples that are produced in Washington can be grown anywhere else," he continued, "although I freely admit that in these hard times apples of poorer quality may be substituted if people cannot afford the best."[18] From Woods's perspective, the railroads were gouging growers and contributing to the downfall of the industry. In a letter to Budd and the presidents of the Great Northern and Northern Pacific, Woods stated that Washington growers believed that "the APPLE INDUSTRY in the WEST IS GONE."[19]

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[17] Gwin, White & Prince to Wenoka and Pinacle Growers, January 31, 1935, Northern Pacific President's Files, # 1787-12, Minnesota Historical Society.

[18] Ralph Budd to Rufus Woods, January 9, 1935, Northern Pacific President's Files, # 1787-12, Minnesota Historical Society.

[19] Rufus Woods to Ralph Budd, W.P. Kinney, L.C. Gilman, and W.E. Coman, December 29, 1934, Northern Pacific President's Files, # 1787-12, Minnesota Historical Society. Emphasis original.

Despite Woods's dramatics, the apple industry in the West had not disappeared. Growers faced financial difficulties during the 1930s, as did farmers across the nation. Government assistance was scarce during the Hoover administration, so the railroads stepped in and extended credit to growers to help keep the industry afloat.[20] Conditions became so bad that in 1932, the Great Northern agreed to finance growers in the Wenatchee Valley. Poor returns on profits coupled with bank failures forced the Great Northern into action, persuading it to form two credit corporations: the Guaranty Credit Corporation and the Columbia Agricultural Credit Corporation, which was organized as a subsidiary of the Northwest Fruit Exchange. The Great Northern and the Chicago, Burlington & Quincy each subscribed $25,000 to each of these companies, for a total subscription of $100,000. In exchange, the railroads received preferred stock and the distribution of assets upon liquidation, and throughout the mid-1930s, dozens of orchards received loans from these companies.[21]

Rufus Woods's prediction proved incorrect because the apple industry successfully weathered the Depression. The Washington apple industry had matured sufficiently so that it could successfully withstand the storm. Transportation and marketing systems had been firmly established, and growers had adopted scientific

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[20] The Reconstruction Finance Corporation created the Regional Agricultural Credit Corporation in 1932 to provide assistance to apple growers. Funds were made available to different corporations, which in turn lent money to growers. The Columbia Agricultural Credit Corporation, which was funded by the railroads, was authorized to borrow up to one million dollars to assist growers in Wenatchee. These loans were slow to reach orchardists. Government assistance in the form of loans was more forthcoming during the Roosevelt administration. Al Bright, *Apples Galore! The History of the Apple Industry in the Wenatchee Valley* (Wenatchee, WA: DMI, 1988), 65-69.

[21] Report on Columbia Agricultural Credit Corporation, July 31, 1941, Great Northern Papers, Box # 132.D.16.9.B, Minnesota Historical Society.

practices such as spraying that enabled them to grow high quality fruit. Throughout the 1920s, the industry was contracting and becoming more efficient. As fruit wholesaler James Crutchfield had predicted in 1912, "the Northwestern districts that cannot grow fine apples had better quit the apple business right away, they have no chance whatever."[22] The number of trees and orchards in the state declined throughout the 1920s, meaning that trees grown on the most marginal land or orchards that were not competitive in the prosperous years were already out of production by the time the Depression started.

Evidence of how far the industry had come by the 1920s was reflected in the types of articles published in *Better Fruit*. When the periodical was first published in 1907, it catered to novice growers who had little knowledge of horticulture or marketing. At a time when central Washington was still sparsely settled, the magazine published articles encouraging farmers to move to the state by extolling the virtues of towns like Yakima and Wenatchee. It educated farmers by featuring illustrated articles on spraying, pruning, and the control of orchard pests. It encouraged standardization in packing and grading. By the late 1920s, *Better Fruit*, like the apple industry, had changed, and articles were no longer geared to novices. Instead of acting as a booster for the region, *Better Fruit* simply reported crop data and marketing prospects for each fruit district. It still provided updates on the latest scientific research, but these were no longer "how-to" articles written for beginners. The magazine assumed that growers possessed a basic level of horticultural expertise that had been lacking a decade earlier. Scientific innovation

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[22] Typescript interview with James S. Crutchfield, December 20, 1912, Northern Pacific President's file, Box 137 E. 19.5B, Minnesota Historical Society.

through the use of improved pesticides, fungicides, and tree varieties increased per tree yields. Even though the number of trees in the state declined from 1920 to 1950, yields remained stable. As the apple industry's early promoters had hoped, the adoption of scientific farming methods increased yields and improved orchard efficiency.

Even though there was a contraction during the 1930s and a loss of some markets, growers were able to retain most of the outlets established in the 1910s and 1920s. Apples had long been a staple in the American diet, but by the 1920s, competition from oranges and bananas threatened to dethrone apples from their place as the "king of fruits." Like apples, these fruits were available on a year-round basis and were promoted by strong marketing organizations. To successfully compete, Washington growers adopted similar marketing strategies, including print ads and recipe booklets. Sales tactics such as branding and multi-pronged advertising campaigns increased consumer awareness of Washington apples, but growers still had to work continually to compete with eastern apples and other fruits that were gaining widespread popularity.

The relationships that growers and shippers had developed with the railroads was also key to the development of the industry, and this relationship helped sustain growers through the Depression. The railroads continued to support the industry in ways other than providing transportation. In the 1880s and 1890s, the railroads had funded irrigation projects, and in the 1910s they provided loans for the construction of cold storage facilities. Throughout the first half of the twentieth century, railroads also supported growers in their marketing efforts, for example, by posting advertisements and featuring Washington apples on dining cars. In the 1930s, they provided assistance by giving loans to failing orchards. The railroads monitored the industry, as evidenced by the wealth of

newspaper clippings, agricultural reports, and correspondence in the Great Northern and Northern Pacific Railway archives. Growers did not always agree with the actions taken by the railroads, and they continued to agitate for lower freight rates throughout the twentieth century. Because of a railcar shortages during World War II, shippers began using trucks during World War II. Refrigerated trucks offered an alternative to rail transportation, and by 1956 trucks transported 34 percent of the apple crop. By 1980 trucks transported 90 percent.[23] Without the railroads, however, the apple industry might never have developed as it did. Railroads linked Washington growers to distant markets and worked behind the scenes in other ways to insure the sustained success of the industry. In recent years as the price of fuel has increased, growers have again turned to the railroads as an alternative to trucks. In 2006, the Union Pacific and CSX instituted a weekly perishable freight train between Wallula, Washington, and Rotterdam, New York, to haul Washington produce to eastern markets on a guaranteed five-day schedule, faster than fruit would have been transported a century ago. Railcars are loaded inside the 200,000 square-foot, 1,500 foot long cold storage warehouse at Wallula to preserve the cold chain.[24] As in the past, improved transportation is again helping Washington fruit to dominate eastern markets.

By the 1920s, although problems remained in the industry, growers had successfully overcome the problems of natural environment and geographic distance

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[23] Al Bright, *Apples Galore! The History of the Apple Industry in the Wenatchee Valley* (Wenatchee, WA: DMI, 1988), 68-75, 196-198, 254.

[24] Marc Entze, "CSX, UP Reconsider Perishable Freight," *Trains* 67, no. 3 (March 2007): 14.

from the markets through farmer education. Orchardists adopted scientific growing methods and marketing techniques, and they had learned how to cooperate with the railroads. While most of the major problems facing growers such as transportation, marketing, and the challenges of Washington's unique climate were solved prior to 1930, researchers continued to experiment with pesticides, fruit varieties, cold storage. In the 1960s, the introduction controlled atmosphere storage, in which apples are rapidly cooled in a low oxygen environment, allowed for extended periods of storage that increased growers' ability to anticipate market demands. Scientific, technological, and marketing improvements helped the industry remain competitive throughout the twentieth century. The foundation of the industry, however, had been firmly established by the 1920s. Growers had learned how to grow apples that were worthy of the title "king of fruit."

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