Maple Sugaring
Tapping into an American Tradition

by
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Many years of syrup samples on display in the window of the sugarhouse. Morse Farm Maple Sugar Works, Montpelier, VT. Personal photograph by the author. 18 Mar. 2011.
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It takes the sap of many trees to make good syrup. Indeed, it feels like this project has had almost as many contributors as there are trees in a sugarbush. Without the inspiration and kindness of so many wonderful friends, colleagues and mentors, this project surely would never have transpired.

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Prologue

Had a dispute with father about the use of my making this sugar when I knew it could be done, and might have bought sugar cheaper at Holden's.

He said it took me from my studies. I said I made it my study.

I felt as if I had been to a university.

--Henry David Thoreau

It is a beautiful sunny day in late March. The heat shimmering off the blue sky is melting the high snow drifts, filling the roads with thousands of tiny rivulets. Last night was cold and crisp, but today there’s that unmistakable feeling of spring in the air. This, I have come to learn, is what sugarmakers like to call “perfect sugarin’ weather.” After six hours of driving from New York City, I climb out of my car onto the muddy driveway of Fox Run Farms in East Montpelier, VT, glad to be anywhere other than on the road. But I am especially glad to be here, at Paul and Sandal Cate’s sugarhouse. It’s 2pm, and Paul has already been boiling for hours, and as I wander over to the sugarhouse I watch the clouds of sweet steam and wood smoke rise off of the chimney.

While I have been studying maple sugaring for the last 12 months, this is the first time, since I was around ten or eleven years old, that I have been in a sugarhouse when the sap is actually boiling. Growing up in New York City, there weren’t too many sugarhouses around to visit, so my experience with what I thought was “maple” syrup was mostly limited to Aunt Jemima syrup on freezer waffles.

My one early experience in a sugarhouse had been brief, but it had made a very big impression on me. I was shocked that, when it came out of the tree, the sap was clear, almost tasteless. I was amazed at how simple it seemed that this clear liquid could metamorphose into that beautiful, thick caramel just by boiling it. I remember wondering with awe how somebody had been clever enough to discover this magical process. Then I remember being somewhat confused that the finished syrup tasted nothing like the syrup that I was used to, which came in the bottle shaped like a jolly lady.

More than a decade later, armed with a year’s worth of research and interviews—and over one hundred pages of writing about the maple sugaring industry and its history—I find myself filled with the same childlike awe as I watch the crystal-clear sap drip from the trees, travel through the evaporator, bubbling all the way, and finally pour from the finishing pan into a bucket as a beautiful, thick golden brown syrup. I sit on an upturned bucket in Paul’s sugarhouse, watching the steam rise, occasionally volunteering to load wood into the arch, or checking the doneness of the syrup by watching it “sheet” off the metal ladle. The ten-year-old boy who lives across the street is here too, and we trade off asking questions about anything and everything Paul knows about sugaring and trees. I may have read a lot more about sugaring than most people, especially this little kid, but he certainly seems to have a better handle on what’s actually going on in the sugarhouse than I do. At the end of the day, when the sap had all been boiled off, I came away with a half-pint of the freshest, most delicious maple syrup I have ever tasted—and a heck of a lot more knowledge about sugaring than I could ever have learned from books.
It has been my great pleasure to come to this project on the sugaring industry as a rank beginner, and to slowly discover so many fascinating and wonderful stories about sugaring, tales told by some of the most welcoming and knowledgeable people I have ever met. During the summer of 2010, I spent a few weeks traveling in and around Washington County, Vermont, where it is not uncommon to pass a sugaring operation every five or ten minutes as you drive down the road. During those few weeks, I interviewed about twenty different sugarmakers. They were an extraordinarily diverse group of individuals; among those I met were a forester, a retired computer programmer, a carpenter, a couple of successful businessmen, several farmers, a retired engineer, and a career maple sugar research professional. Some tapped 300 trees, others 30,000. One had learned to sugar just 10 years ago, and another was the 7th generation sugarmaker in his family.

I was interested to learn that, despite their wide range of backgrounds, career paths and styles of operation, most of these sugarmakers knew one another, and participated in a community of sugaring where techniques, technologies, forest management strategies and stories are shared. For these people sugaring is more than just a hobby or a profession; indeed, it is a way of life. The sugarmakers share a deep sense of commitment to the heritage of sugaring, and a dedication to preserving the forests and the trees for future generations of sugarmakers while still getting the most they can out of every year’s sweet run of sap. Even the most veteran experienced sugarmakers evince a childish wonderment when they think about the magic of what they do: turning the life-blood of an untamed tree, through simple boiling processes, into one of the most delicious and sweet delicacies on earth.
One of my interview subjects, Peter Purinton—who has been sugaring for a living as long as he’s had a living to make—expressed this sentiment well in saying, “It’s a labor of love. To think that it comes from maple trees, nothing is added to it, and it is for the taking… and to be a bouquet product! It still mystifies me. It’s fantastic.”

This thesis is largely concerned with retelling some of the fascinating stories told by the various sugarmakers I met last summer, framed within the larger historical narratives of the ecology, technology, and cultural associations of maple sugaring in the Northeast. The stories I chose to tell highlight many of the delights, concerns, triumphs and struggles of this vibrant and evolving agroforestry industry. Looking forward, sugarmakers will continue to confront challenges of all kinds, including a number of environmental threats, technological hurdles, and shifting cultural values, any of which could seriously threaten the long-term sustainability of sugaring as a business, and as a way of life.

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sustainability of sugaring as a business, and as a way of life. It seems more than likely, however, that sugarmakers—who are as deeply rooted in their business as the sugar maples are in the soil and the soul of the Northeast—will continue to produce syrup, as long as the trees keep on growing and flowing.
Introduction

To view the landscape historically is to acknowledge its cumulative character; to acknowledge that nature, symbolism, and design are not static elements of the human record but change with historical experience.

--Michael Conzen

The diverse forest landscapes of the Northeastern United States today are the result of centuries of human impact. Maple sugaring is one of the longest traditions of forest management that has affected, and been affected by, the way that humans have inhabited, and exploited, these landscapes throughout history. The art of making sugar from the sugar maple tree has been practiced by human settlements for several centuries of recorded time, and, according to what records we can piece together, many more centuries of unwritten history.

Maple sugaring was pioneered by the earliest Native Americans, and has been developed and perfected by many generations of Indian and Euro American communities. Over the centuries, the Northeastern forests have grown and evolved through several major periods of development—some of it on a large scale—but the forests seem to have been largely unaffected by the tapping of the sugar maple trees. Indeed, the culture of maple sugaring has historically been inextricably tied to these broader changes to the forest landscape, and the trees have been forced to adapt, or left to fail, in the face of environmental movements driven by more powerful cultural influences.

The earliest origins of maple sugaring lie shrouded in the realm of myth, but it is clear that sugaring was originally developed by Native American Indians long before the arrival of European settlers. The Northeastern landscape was heavily forested during the reign of the Indians, and while Indians did somewhat alter the forest structure in order to favor and promote certain types of hunting and gathering conditions, the deep forests, including many gigantic stands of maples, continued to cover most of the landscape. Indian communities treated the sugar maple as a key item on long list of valuable forest resources, which were critical to supporting a well-balanced foraging lifestyle. Indian sugarmakers used stone hatchets, bark gathering pails and hollowed-log boiling vessels, and they created a dark, smoky hard sugar. These early sugarmakers—and sugar consumers—considered the sugar maple as a gift from the gods, like fire, as well as a crucial staple that could sustain communities through the lean late winter months.

When the first European communities began to establish themselves on the North American continent, one of the first crops they harvested was maple sugar. These early Europeans learned sugaring methods directly from the Indians, adapting their tapping and boiling methods and improving the techniques by wielding the iron tools that they brought with them. These early European sugarmakers believed maple sugar could function as a direct analog to the cane sugar of the West Indies, and they sought to replicate the physical qualities of that more familiar sugar as closely as possible. The maple sugaring industry grew in popularity and market demand in part because an influential contingent of citizens responded to one of the virtuous selling points about maple sugar: the potential moral superiority of maple sugar grown by
“free” citizens of democracy, over sugar grown by imperialists and harvested by slaves in the West Indies. The industry also experienced a boost from individuals who were interested in promoting the economic benefit of a more localized source of sugar, which would eliminate the need to import costly sugars from abroad.

As sugaring techniques developed and advanced throughout the 18th century, rumor began to spread of the possibility and advantages of actually replacing the cane sugar industry with maple sugar, both domestically and abroad. Around the turn of the 19th century there was a surge in research, development and popular interest in the maple sugaring industry. This period, now known as the “maple sugar bubble,” reflects a moment of intense passion about the future of maple sugaring in America, the likes of which has never been matched since. Although maple sugar never did rise up and overtake cane sugar in the international marketplace, the narratives invoked during this “creationist” period have heavily influenced the way that maple sugaring has been marketed ever since that time—inextricably linked to images of liberty, equality, and the values of the down-home American farmer.

One of the primary reasons that a major international sugaring industry never managed to get off the ground was a simple matter of cutting and slashing: as Euro American settlers invaded and developed the Northeast for agriculture, they hacked down nearly 80% of all the trees that had so recently covered the landscape. Without sugar maple trees, there could be no maple sugar.

Much of the American public was motivated and determined to establish a maple sugaring economy, but there was little coordinated effort to actually maintain the forests, and develop the infrastructure necessary to actually implement large-scale
maple sugar harvesting.

The sugaring industry peaked in the 1860s, reaching a production level that has remained largely stable ever since. As the price of cane sugar dropped towards the end of the 19th century, maple sugarmakers were pressed to innovate in order to maintain the market for their product. At the turn of the century, the Vermont Maple Sugarmakers’ Association provided a foundation for the organization of sugarmakers into a coordinated unit dedicated to preserving the quality standards, and the public image, of pure maple sugar and syrup.

When the country began establishing agricultural colleges in the late 19th century, sugar maple ecology began to rise as a professional discipline, and by the mid-20th century many scholarly research projects were underway that examined all aspects of the sugar maple’s life history, as well as its use as a source of sugar. Throughout the 20th century, sugar maple ecology and sugaring technologies evolved hand in hand. Sugarmakers strove to improve production efficiency and sugarbush health in order to keep up in an increasingly competitive market atmosphere. Despite heavy regulation and government protections for the pure maple syrup market, competition from cheap imitation syrups grew fierce, forcing maple sugarmakers to be ever more creative and proactive about marketing and protecting their product.

In recent decades, sugaring technologies have advanced rapidly. Whereas fifty years ago most sugarmakers hand-gathered sap with buckets, and boiled their sugar on wood-fired evaporators, sugarmakers today most use plastic tubing networks, hooked up to vacuum systems, which draw the sap into high efficiency evaporators and reverse osmosis systems which process sap quickly and cleanly. These changes
in technology represent an enormous economic benefit, without which arguably the maple sugaring industry could not have survived into the 21st century.

Improvements in technology run parallel with advances in sugar maple science. Researchers involved in sugaring today are focused on promoting sustainable and efficient sugaring technologies and dealing with environmental threats to the tree’s long-term viability. Sugarmakers work closely with researchers to maintain the health of their sugarbushes, an investment that benefits both the sugarmaker and the wildlife that inhabits the area.

As maple syrup prices continue to rise, the sugaring industry in recent years is thriving, bringing in new producers every year. The recent trends in organic and all-natural food marketing have increased the popularity of maple syrup, which is inherently all-natural and usually completely organically grown. Local foods movements have also contributed to the rising success of small sugaring operations across the Northeast that can serve regional farmers’ markets. A growing domestic agrotourism industry and increasing nostalgia for the old New England farm life has provided a cultural incentive for Americans to learn about—and purchase—maple syrup products.

Looking to the future of the maple sugaring industry, sugarmakers are faced with some tough challenges. As the Asian Longhorn Beetle, a maple-loving invasive insect species, creeps ever-closer to the heart of American sugaring country, sugarmakers fear for the long-term health of their sugarbushes, most of which are monoculture sugar maples, especially susceptible to insect damage. Another significant danger is posed by global climate change, which threatens to alter the
environment so much that sugar maple trees may no longer be able to survive in the Northeastern forests. In order to surmount these potential threats, and others yet to surface, sugarmakers must continue to innovate to keep sugaring relevant, and to keep sugarbushes healthy for future generations.

In the four chapters of my thesis, I aim to portray the history of sugaring through three different lenses. The first lens is that of ecology. In the first chapter, “Acer saccharum,” I explore the history of the Northeastern forest landscape, focusing on the role that the sugar maple has played. I also examine the evolution of sugar maple ecology throughout human history, in an attempt to elucidate the current science of sugaring, and to demonstrate how it has helped transform the process of sugaring from a somewhat haphazard set of ancient techniques and traditions into a modern, efficient, and arguably sustainable agroforestry industry.

The second lens I use is that of technology. In the second chapter, “Tapping Sap, Boiling Sugar,” I portray the development of sugaring technologies throughout history. I place special emphasis upon the rapid advances of technologies in the last half-century, which have profoundly altered the way that sugarmakers approach the business today.

My third lens is that of culture, which I explore in both the third and fourth chapters of this thesis. In the third chapter, “Maple Mania,” I review 18th and 19th century sugaring culture, zooming in on the turn of the 19th century, during the “maple sugar bubble.” I explore the reasons that interest in maple sugar exploded in the United States, as well as the reasons maple sugar did not succeed in to taking over
the international sugar market.

In my fourth and final chapter, “Making Maple Modern,” I look at 20th century sugaring culture and marketing, delineating the ways in which sugarmakers throughout the past century have adapted to, and manipulated, market trends in order to promote maple sugar and syrup in the face of rising production costs.

A Note on the Scope of the Project

The focus of this thesis is on the sugaring history of the United States, especially Vermont, which is the largest producer of maple syrup in the States today. It is important to note that the epicenter of the sugaring industry worldwide, in terms of annual production levels, is Canada. In any given year in recent decades, Canada has outproduced the United States by four or five times, and has exported about 70% of that production directly to the United States. Thus much of the syrup most Americans consume today is actually produced in Canada. I have chosen explicitly to restrict my project almost exclusively within the borders of the United States in order to provide a more focused historical account of American sugaring culture. This project is designed as a general narrative of the evolution of sugaring throughout the Northeast, along with a selective portrait of the modern sugaring industry in America, told through the stories and experiences of sugarmakers around Washington County, Vermont.
Acer saccharum:
A History of the Northeastern Forest Landscape, and the Evolution of Sugar Maple Ecology

Environment may initially shape the range of choices available to a people at a given moment, but then culture reshapes environment in responding to those choices. The reshaped environment presents a new set of possibilities for cultural reproduction, thus setting up a new cycle of mutual determination. Changes in the way people create and re-create their livelihood must be analyzed in terms of changes not only in their social relations, but in their ecological ones as well.

--William Cronon

Sugar maple ecology has been a constantly evolving area of study whose boundaries reflect the evolution of ecological science in North America from the arrival of European settlers to the present. The sugar-producing qualities of the sugar maple were long known to Indians prior to the arrival of Europeans on the Northeastern coast. Native communities, well informed about the useful properties of the plants and animals around them, had learned to concentrate the sweet sap that runs out of the maple in the spring time to create a hard sugar that was nutritious, long-lasting, and portable. Euro American settlers, less knowledgeable about the forest’s intricate dynamics but eager to exploit its valuable resources, slowly developed a scientific understanding of the ecology of the sugar maple, culminating in the 20th century in a complex and integrated body of knowledge that guides the

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sugaring industry today; this knowledge promotes informed and sustainable sugarbush management for the future of sugaring.

For the reader who may not be familiar with basic tree science, I will begin by providing a background in our modern understanding of sugar maple ecology. I’ll continue by exploring the way that the sugar maple has inhabited the landscapes of Northeastern forests, and explain the way that sugar maple ecology evolved from the experimentation of curious sugarmakers. I’ll finish by investigating the state of sugar maple ecology today, informed heavily by the needs and goals of the sugaring industry.

Sugar maple (Acer saccharum) is a hardy, adaptable tree which has demonstrated great resiliency through many eras of forest change in the Northeast. The sugar maple thrives in cool temperatures, doing best when averaging from around 18°C to 16°C. It is well known in those regions of the Northeast where harsh, cold winters are prefaced by the startling and gorgeous colors of changing autumn foliage, in which the sugar maple plays a starring role in an explosion or red and yellow. Its geographic range, in today’s climate, extends as far south as Tennessee, avoiding the warmer coastal regions, and out west as far as Missouri and Minnesota.
The sugar maple can be found on a variety of soil types and qualities, including steep slopes and rocky hillsides, almost anywhere the temperature is right, and where there is a moisture-rich environment. The sugar maple is a highly shade-tolerant hardwood species, thriving almost as well under a thick canopy as it grows in an open field. The trees mature at a very slow rate, but also have been known to live
for a very long time. Old sugar maple stands can live as long as 300 or 400 years, rising to 90 to 120 feet in height and growing to 76 to 91 inches in diameter.⁵

The most important aspect of the sugar maple ecology in relation to sugaring is, of course, the nature of the sap and its sweetness compared to other comparable tree species. Even after many decades of scientific research that have investigated sap flow, there is still much we can learn today about the nature of sap flow. I do not intend to write an extensive review of the many papers on sap flow that have been written to date, but rather just to give the reader who is unfamiliar with the process of sap flow a basic picture of what makes it happen.

In the spring and summer, when the maple tree bears leaves and collects sunlight through photosynthesis, its leaves uses sunlight and nutrients brought up through the soil to produce basic starches; so it is with all trees, and most plants for that matter. In this regard the maple is not unique. Those starches—mainly sucrose—are in part used to maintain the normal functions of the tree throughout the year. In the sugar maple, a large portion of those starches are stored throughout the winter in order to facilitate the extra growth and budding of the leaves during the early springtime. When the tree drops its leaves in the fall, it enters a kind of hibernation state, not growing but still alive. The sap, which normally runs through the tree during warm weather, becomes frozen inside the living wood.

When the wood begins to thaw out in the spring, the sap melts inside the tree, and begins to flow within the sapwood up into the limbs and stems of the tree, providing nourishment for growth and bud formation. The sugar maple is unique

among similar hardwood species in the kind of pressurization happens during the freeze/thaw cycles characteristic of early spring. During weather where temperatures hover above and below freezing, internal pressures in the tree fluctuate based on the freezing and thawing of the sap. When the sap freezes, negative pressure sucks liquids up through the roots, filling the empty voids in the sap wood. As the tree thaws out, the melting sap expands and exudes positive pressure upon the tree, allowing the sap to flow freely, and creating the perfect conditions for the sugarmaker. When the tree’s bark is pierced, say by a sugarmaker’s drill, the sap runs easily from the wound due to the pressure of thawing.

The sugar maple is unique among trees in general due to the relatively high levels of sucrose it contains, which are unadulterated by unpalatable or indigestible chemical compounds. There are other hardwood species, even other kinds of maples, which produce a sweet sap, but the percentage sugar found in the sugar maple (around 2-3%) is higher than that found in any other species. Some genetically favorable trees produce as much as 10% sugar content in any given year, but such levels are not common. Depending on the season and on the sugarbush, maple sap can include low levels of various minerals, including nitrogen, phosphorus, potassium, calcium, and magnesium. Maple sap also includes a somewhat mysterious collection of chemical flavor compounds, some of them matching compounds found in vanilla beans, coffee, and other flavors appealing to the human palate. The distinct flavor of a single batch of syrup depends on the soil type and the climate of the sugarbush as much as it does on the manner in which the sugarmaker treats the sap after extraction.

Now with this basic understanding of the maple tree outlined, we can consider the evolution of the ecology of the sugar maple tree, paying special attention to the considerable role that the development of sugaring played in that history. One of the foremost authorities on the environmental history of the American forests, William Cronon, describes the evolution of the Northeastern woodlands from early Indian habitation through the beginnings of the American nation. Cronon’s account provides an overview of the evolution of Northeastern forests, and supplies a detailed background to trace the evolution of the sugar maple’s role within those forests.

According to Cronon’s history, pre-contact Indians lived in a heavily forested and highly diverse landscape, a “mosaic of tree stands with widely varying compositions.” He explains that

Each individual tree species had its own unique range and ecological characteristics, so that many different combinations of species could be found within a single vegetational zone or even within a few square miles.7

This patchwork landscape arrangement was well suited to the mobile foraging lifestyle of the Indian communities who lived in the Northeast. These communities actively maintained their forests by setting intentional forest fires which promoted better wildlife habitats for hunting. Regular burns promoted the growth of more fire-resistant and fast growing species while reducing the incidence of moisture-loving hardwood species like maple, which could not withstand the impact of the fire.

Cronon explains,

Colonial observers understood burning as being part of Indian efforts to simplify hunting and facilitate travel; most failed to see its subtler ecological effects. In the first place, it increased the rate at which forest nutrients were recycled into the soil so that grasses, shrubs and nonwoody plants tended to grow more luxuriantly following a fire than they had before. Especially on

old Indian fields, fire created conditions favorable to strawberries, blackberries, raspberries, and other gatherable foods. . . The thinning of the forest canopy, which resulted from the elimination of smaller trees, allowed more light to reach the forest floor and further aided such growth. The soil became warmer and drier, discouraging tree species which preferred moister conditions—beech, sugar maple, red maple, black birch—and favoring drier species like oaks when regular burning was allowed to lapse.  

Regular intentional burns thus had a significant effect on the composition of forest structure, discouraging the proliferation of a moisture loving species like the sugar maple. Such ecological alterations, however, were never widespread enough or frequent enough to completely discourage the establishment of maple stands which that could be harvested for sugar.

The sugaring tradition was integral to the culture and religious life of many Northeastern Indian communities for whom maple sugar was an excellent source of nutrition in a period of the year—early spring—when other plant and animal foods are scarce. E. Barrie Kavasch, an ethnobotanist with an interest in Native ecology, has written a concise summary of the folklore of sugaring. She describes the connection between religion and ecology that informed the yearly traditions related to the sugaring season:

Native people discovered in their woodlands the sources of seasoning and sweetening medicines and foods. Long before recorded history, their investigations unlocked the secrets of extracting many dietary substances from their natural environments. Lost in prehistory are the earliest experiences that led to “sugaring.”

The late winter harvest, conceived millennia ago, produced rich rewards for woodland industriousness, and the oral traditions of many Indians spread the knowledge. The origins of sugaring are embraced in tribal legends which have been handed down through generations into recorded time. Tribal elders counted the winter moons and studied the stars which were believed to control the winter sky. For the Mohawks, when the Pleiades, symbolizing their seven dancing warriors, appeared directly overhead in the winter sky, it

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8 Ibid., 50.
signified the time of the Midwinter Ceremony and their New Year’s Feast. The preparations for sugaring season followed this celebration.

The Mohegans believed that the melting snow caused the spring sap to run in the maples; they considered the sap to be the dripping of oil of the Great Celestial Bear, who had been wounded by the winter sky hunters – according to their own Pleiades story. The bear, sometimes becoming the celestial bear and embodying the Big Dipper, repeats itself through many Indian origin stories.9

The earliest ecological conceptions of the maple tree were imbued with religious significance linked to astronomical and mythological interpretations of the changing seasons.

Since we lack a written record that stretches back beyond the first European contact with the native North Americans, we have scant evidence that describes exactly how well early Indians actually understood the physiology of the maple tree and the mechanism of sap flow. While those Indians who were sugaring doubtless had a strong understanding of the life cycle of the sugar maple, since they were well acquainted with the botanical resources of their landscape, it appears that early sugarmakers routinely killed many of the trees they were tapping, from year to year. Indian communities, apparently not concerned about preserving individual trees, bled their sugar maples dry, confident that they could tap a nearly inexhaustible supply.

In an era when deep forests carpeted the landscape, killing off individual trees or entire stands was not critical, because a community could simply move on to another stand nearby. Eighteenth-century French explorer Pierre Francois-Xavier de Charlevoix describes the way the Algonquians he encountered treated the sugar maple trees during sugaring season:

It is easy to guess, that after such a discharge of what may be called its blood, the tree should be far from being bettered: we are told, however, they will endure it for several years running. They would, perhaps, do better to let them rest for two or three years, to give them time to recover their strength. But at length, after it has been entirely drained, it is sentenced to be cut down, and is extremely proper for many uses, as well the wood as the roots and boughs. This tree must needs be very common, as great numbers of them are burnt.10

Indians casually killed maples on an individual basis, just as they exploited many other forest products. There was no pressure to conserve one tree’s life when its wood would also be used for other purposes. There were simply so many more maples than there were Indians to drain them dry. Indians probably saw sugar maples as an essentially limitless resource, and despite the impact that Indian sugaring may have had on the overall population of maples, these trees still occupied an extensive range throughout the Northeastern forests at the time of first European contact.

The arrival of European influence on the continent introduced an entirely new ecological philosophy which would eventually alter the landscape, transforming it from the diverse woodland habitats of the past into settled agricultural communities largely cleared of forests. Whereas Indian ecology centered around harvesting seasonal natural bounty, and was practiced on a small enough scale to promote cyclical regrowth of key nutritional sources, the European influence on forest stands consisted primarily of large-scale lumber exploitation, followed by intensive open-field agriculture.

Despite knowing the sugar-producing qualities of the sugar maple, there was little economic incentive for the members of the British Empire living in the Northeastern colonies to encourage the preservation of those trees because of the

ready supply of hugely profitable slave-produced West India cane sugar. The timber that could be harvested from the sturdy, handsome, flammable hardwood of the sugar maple was far more valuable in the Atlantic trade economy than a secondary source of sugar. But beyond the large-scale timber harvesting directed specifically towards sale to lumber-hungry Europe, many trees were cut down merely for the sake of creating more space for open-field crop cultivation, such as corn and wheat. Let us return once more to Cronon, who explains how maples, among other mature, moisture-loving hardwood species, suffered greatly from this broad scale assault on forests:

Trees that required and maintained moist forest conditions, such as hickories, maples, ashes, and beeches, generally produced a rich black humus beneath their fallen leaves, and settlers interpreted them as indicators of prime agricultural land. Oaks and chestnuts, with their denser undergrowth and more frequent groundfires, had thinner soils which required more work before they would produce favorable European crops.  

Cronon points out one of the primary reasons maple sugar was not produced commercially in the colonial era; the sugar maple trees were all being cut down, and there were no maple forests left to tap. Sugar maples left near settlements were often those that lay on the marginal waste lands surrounding the rich, deep soils that once held maples, but now held European food crops.

When the popularity of maple sugaring began to surge alongside the growing concerns about the politics and morality of the West India sugar trade, American farmers and scholars began to delve deeper into the science behind the maple tree’s physiology and the mechanisms of sap flow; this inquiry jumpstarted a tradition in

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scientific sugar maple ecology that would become, by the mid-20\textsuperscript{th} century, a veritable scholarly profession.

In the 18\textsuperscript{th} century, research on maple physiology was compiled not by professional scientists, but by farmers who, like the Indians before them, had intimate working knowledge of the physical mechanisms of the trees with which they worked to make a living. Those farmers who cultivated maple trees in the back woods were not in the habit of publishing their research in a public forum, however. Thus, much of the public support for and dissemination of information about advances in maple sugaring technology and ecology, was provided by gentleman-scholars like Benjamin Rush whose interest in maple sugaring was largely that of a dilettante. A physician by trade and a politician by association, Rush gathered wisdom from sugarmakers around Philadelphia, culling information and data from various amateur studies, and creating the first major thesis on maple sugaring.

Benjamin Rush published this work as “An Account of the Sugar Maple, of the United States, and the Methods of Obtaining Sugar From it.” It was by far one of the longest and most in-depth explorations of the sugar maple and sugaring practices up to that time. Indeed, what had started as a two-page article on sugaring printed in a Philadelphia newspaper in 1790 grew into a 24-page treatise on the methods and ethics of this enterprise, which was presented to the American Philosophical Society in 1791. The document was then published as a pamphlet for public consumption in 1792. This extensive work was advertised widely throughout the nation, and was likely distributed to scientists, politicians and farmers alike. Much of Rush’s work is philosophical, and another large part concerns the tools and technology of the trade,
but his treatise also includes a section in which Rush recounts the most advanced “research” into the tree’s ecology.

Rush describes two discoveries made not by scientists, but by settlers, which offered clues to the manner in which the sap flows through the wood of the maple. Such data was gathered in the process of performing two everyday labors; first, cutting down trees, and second, “girdling,” or killing standing trees, in order to clear fields or provide lumber. This is how he describes these observations on sap flow, in 1791:

The sap distils from the wood of the tree. Trees which have been cut down in the winter for the support of the domestic animals of the new settlers, yield a considerable quantity of sap as soon as their trunks and limbs feel the rays of the sun in the spring of the year. It is in consequence of the sap of these trees being equally diffused through every part of them that they live three years after they are girdled, that is, after a circular incision is through the bark into the substance of the tree for the purpose of destroying it.12

Another contemporary article published in the New Haven Gazette, which describes the physiology of the maple, presents a different picture of the scientific basis behind sap flow. The author, presuming that trees make sap out of the air, asserts:

The first appearance of vegetation among trees here, is the flowing of the sap in the sugar maple. This begins with the frosty mornings (sic) in the month of February. These hoar frosts never appear but when the air is moist; and it is invariably certain, that the sap ceases to flow when the wind is at north-west and the air dry, be the state of the earth as to moisture or frost as it may. From hence it appears that the sap is extracted from the air even before the leaf is expanded, and not from the earth, as is generally supposed.13

This simple picture of the maple tree’s inner workings reveals the primitive knowledge that individuals engaged in silvicultural pursuits had of the science behind their commodities. With the establishment of professional ecology still many decades away, the farmer-experimenter was positioned to be the greatest expert. While the Connecticut writer’s claim that sap was extracted from the air could not be refuted by the observations he made, his scientific methods were flawed, and his findings soon proved erroneous.

During the first swelling of interest in the production of maple syrup, many experiments were conducted in cultivating sugar maple plantations, with varying success. Thomas Jefferson experimented in sugar maple domestication at Monticello. Jefferson sought to bring this valuable sugar source under the control of the familiar European model of agriculture by establishing a plantation of maples that could thrive outside the natural course of forest regeneration. In the early 1790s Jefferson first attempted propagating maples from seeds, but had no success. Soon thereafter he planted 60 maple saplings, but by 1794 only eight had survived. Today only one sugar maple remains alive on the Monticello plantation.¹⁴

What Jefferson did not know, and what would not become established science until the latter half of the 20th century, is that the sugar maple, like all tree species, has a specific range of soil moisture and temperature conditions that it requires in order to successfully grow to maturity; in locations outside that range, Monticello included, it is unlikely that the sugar maple will thrive. Modern studies on the environmental adaptation of the sugar maple designate its range as extending as far south as

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Tennessee, but avoiding the warmer coastal regions that include the location of the Monticello plantation (see figure 1). The sugar maple is “restricted to regions with cool, moist climates.” Monticello may be no desert, but by sugar maple standards it was simply too hot and dry for this type of tree to thrive.

Jefferson was not the only individual who attempted to cultivate a planned maple plantation. In the early Republic when so much of the land of our young nation was given over to agriculture, interest in native maple sugar was high—yet most of the trees had already been clear-cut for lumber and field space. In his “Account of the Sugar-Maple Tree,” Rush discusses the issue of planting maple trees. He claims:

From the influence which culture has upon forest and other trees, it has been supposed, that by transplanting the sugar maple-tree into a garden, or by destroying such other trees as shelter it from the rays of the sun, the quantity of the sap might be increased, and its quality much improved. I have heard of one fact which favours this opinion. A farmer in Northampton county in the State of Pennsylvania, planted a number of these trees above twenty years ago in his meadow, from three gallons of the sap of which he obtains every year a pound of sugar. It was observed formerly, that it required five or six gallons of the sap of the trees which grow in the woods to produce the same quantity of sugar.¹⁵

Rush suggests that not only would planted maples thrive, but that they would even produce better, sweeter sap than their wild cousins. This concept was echoed by contemporaries,¹⁶ and was pursued avidly by a generation of scientific sugarmakers.

¹⁶ In 1784 Crevecoeur reports that “I have cleared about a half acre of land adjoining it, on which I have planted above seventy young maples, which I have raised in a nursery.” In 1832 an unnamed farmer writes, optimistically, that the sugar maple “is a tree of tolerably quick growth, bears transplanting very well, and will grow on almost any soil.” Hector St. John de Crevecoeur, More Letters from an American Farmer (New Haven: Yale University Press, 1925); W.H., "Sugar Maple--Acer Saccharinum," The Genesee Farmer and Gardener's Journal 2, no. 30 (1832).
of the early 20th century whose legacies would help to build the community of informed, forward-thinking sugarmakers that drives the industry today.

Beginning in the 1850s a political movement arose to establish a system of agricultural colleges in America in order to foster the increasing professionalization of the agricultural sciences and improve all aspects of farming through research and development. This movement, led by Professor Jonathan Baldwin Turner of Illinois College, came to fruition in 1862 with the passing of the Morrill Land-Grant Colleges Act. The act was designed to support and maintain “at least one college” in each state to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.17

The passage of this act opened up higher learning opportunities for individuals engaged in professional agriculture who previously were not expected to benefit from a university education. The Morrill Act was in fact the first apportioning of Federal aid to education in America, and its passing spurred on the foundation of many of the influential agricultural programs that are still very much alive and thriving today.

The University of Vermont (UVM) was among the first schools that took advantage of the land-grant act. UVM was initially founded as a private college in 1791, but soon after the Morrill Act was passed the school began construction of the State Agricultural College, which was to function under the administration of UVM. After the foundation of the Agricultural College, UVM grew to become one of the most influential forces in the research and development of maple sugaring in the

17 U.S. Code. Title 7, Chapter 13, Subchapter 1 § 304. Investment of proceeds of sale of land or scrip.
Northeast. Professors at UVM have been conducting research on sugar maple under the auspices of the Agricultural College since the 1880s, always seeking to improve the yields of sugar for farmers looking to turn the best profit on their trees.

In the 1890s, C.H. Jones, a chemistry professor at UVM, persuaded the college to lease out a local sugarbush, Melandy Hill, for use as a field site so that he might conduct research on the sap flow in sugar maples. Based on this research, Jones produced treatise entitled *The Maple Sap Flow* which presents an in-depth discussion of the “problem of sap pressure and flow.” This work represents a significant improvement over the more casual, assumption-based scientific research exhibited by late 19th century farmers. Jones’ intensively researched study demonstrates two essential points: first, that the sap rises up through the tree from the roots, and second, that the flow of sap is caused by internal pressure changes in the inner cambium that are caused by fluctuations in temperature above and below freezing. Of the nature of the pressure within the tree, he writes:

Sap ceases to flow during a cold night; but it starts up again as the temperature of the air rises above 0°C (32°F.). Coincident with the renewed flow an increased positive tension or pressure has always been observed. They are simply two forms of expression of the same phenomenon. Whatever causes one produces the other. While probably not the sole and ultimate cause of these variations in sap pressure and movement, yet the immediately exciting cause is certainly found is the fluctuations of air temperature back and forth over the 0°C. (32°F.) line.¹⁸

Jones’ descriptions and charts on the connection among sap flow, temperature and internal pressure would prove to be a crucial foundation upon which all sugaring technologies would eventually build.

Figure 2: A demonstration of pressure experimentation techniques performed at the Melandy Hill sugarbush. Reproduced from Charles Howland Jones, A. W. E., Warner Jackson Morse (1903). "The Maple Sap Flow." University of Vermont and State Agricultural College Bulletin 103.
Jones’ “Maple Sap Flow” experiments, along with others he and his team conducted at the Melandy Hill sugarbush, made many important contributions to the sugaring community. They were produced despite sub-par working conditions. Jones and his fellow researchers, who did not have access to a permanent laboratory, were forced to work out of a hotel. Such conditions were not conducive to long-term experimentation, and the ambitious goals of the UVM research team required a more permanent home.

In the 1940s the forerunners of a new generation of dedicated sugaring researchers—Dr. Fred H. Taylor and James W. Marvin, from the Botany Department at UVM—entered the field with great aspirations. These men were eager to establish a permanent home for maple research at the University, and they applied to the then Governor of the state, Mortimer Proctor, to elicit funding for the project. Proctor petitioned the state legislature for support; when those “frugal Yankees” were unwilling to dedicate state funds to the project, Proctor himself bought an old sugarbush and donated it to UVM.\(^{19}\) In 1946, the former Harvey Farm in Underhill, Vermont, was rechristened “Proctor Farm,” becoming the nation’s first University-owned maple research center; this center continues to this day as a strong leader in the field of sugaring technology, ecology, and environmental management.

In the summer of 2010, I visited the Proctor Center to interview the current director and lead researcher, Timothy Perkins. Based on a former working farm, the Center is small, unassuming and unglamorous. Located 45 minutes from the main UVM campus, it is tucked away among other working farms and woodlots on a small,
winding, unpaved road. Most of the property is given over to thick, sugar maple woods, with a few small outbuildings, several ruins of sugarhouses of old, and one small main research facility. A light drizzle mists through the deep sugar woods that spread on all sides of the main building. The atmosphere in the facility is usually low-key during the summer months, with the spring sugaring season long over, and many months yet to prepare experiments for the following year. Today, however, the offices are all but abandoned, as they have been for weeks; the only direct, paved road up to the forest is undergoing repair. Heavy rains have made the alternate route a sketchy affair for my two-wheel drive sedan, and I barely make it up the last steep pitch to the Center.

Perkins meets me at the door, looking more like a sugarmaker than a scientist. Wearing shorts, tee shirt and hiking boots, he welcomes me into his office with an easy wave. Tim has agreed to tell me about the history of the Proctor Center, as well as his involvement with the research they have been doing over the 26 years that he has been employed there. Perkins reports that many things have changed in the last half century, and these changes have completely altered the way researchers at the Center have approached the subject of maple research, both reflecting and in turn affecting the way that sugaring has evolved to meet the challenges of this limited-market, and heavily environmentally-dependent, industry.

As participants in a small, non-vital food industry, maple sugarmakers have long been invested in promoting the highest efficiency methods for producing syrup. Fifty years ago, when the extraction and boiling technology was still based on buckets, gravity and wood-fired evaporators, sugarmakers were particularly
concerned with the notion of cultivating “sweet trees,” according to Perkins. Indeed, one of the main goals of Dr. James Marvin and Dr. Fred Taylor at the Proctor Center for many years was the pursuit of sweet trees which could be bred and planted in orchards to produce the maximum amount of sugar per ounce of sap in every tree tapped. Helen and Scott Nearing, authors of a seminal 1950 book on sugaring history and technology, *The Maple Sugar Book*, mention that Marvin and Taylor hope to raise a pedigreed strain that will become productive in about twenty years, yield about four times as much sap, and have a high sugar content. For the time being we must content ourselves with native, wild, hard maples.

Thus do the authors of the most prominent twentieth-century book on sugaring discuss waiting “with bated breath” for the arrival of the sugarbush of the future; domesticated, cultivated, and extra-sugary. Waiting, like Jefferson, for the age of the maple plantation, when maple sugaring might be brought out of the dark shadows of its wild, unplanned forest lifestyle, into a grove of order and easy bounty.

Despite more than a century of interest and experimentation in sugar maple domestication—and despite successes in the domestication of other tree species, including many fruit and nut trees around the world—sugar maple breeding and planting never became popular. There are several reasons for this: first of all, you can blame it on the fact that the tree takes an exceptionally long time to grow to full maturity. Sugar maples are mature enough to start tapping only after 30 or 40 years of growth, a span of time that is almost longer than the normal working lifetime of sugarmaker. A sugarmaker starting his career will not have time to plant a grove, wait 40 years, and then start tapping; by that time the producer could have produced

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40 years of good syrup from an existing stand. Perkins notes that from the perspective of research, attempts to establish experimental plantations are nearly impossible to carry out. Not only are researchers unlikely to stick with a project for 40 or 50 years—although, of course, research could be passed down to younger generations of scholars—but such a long project would also require 40 to 50 years of sustained grant funding, meaning 8 to 10 successive, successful proposals for five-year grants. Perkins admits, “it just isn’t worth that kind of effort.”

Another important reason that it has historically made more sense to use wild rather than cultivated maples is fact that the trees are everywhere already—why plant them? Within their sizeable climate range, maples are quite versatile, and extremely prolific.

Historically maples have been a common component of Northeastern forest ecosystems, from the time of the native Indian settlements up through the climactic events of the agricultural revolution. By the mid 19th century, American farmers in the Northeastern forests had managed to take down 80% of the woodlands, leaving only 20% of the trees, on the land least desirable for farming. Despite the efforts of maple enthusiasts and champions of the maple sugar bubble, sugar maples were hacked down with all the rest, turned into furniture, housing materials, fence posts, or just plain burned down.

In the middle of the nineteenth century, farmers began to abandon the rocky, unforgiving and played-out soils of New England and the Mid Atlantic for the much richer, deeper soils of the Midwestern plains. The Industrial Revolution attracted many former farmers to a faster-paced city life and factory work. Millions of acres of
forgotten fields went to seed, and returned to the natural cycles of forest dynamics, at
least for a time. The first species to recolonize in any significant numbers were the
softwoods, fast-growing pioneer species like white pine. By around 1910, those
softwood forests had grown to harvestable height, and across the Northeast, stands
were being clear-cut and shipped to sawmills. Slower-growing, shade-tolerant species
like hickories, oaks and maples had already begun to populate the understory as the
white pines developed, and once the pine overstory was removed, these hardwood
species were able to mature and take over the forest canopy.

Currently a large majority of our Northeastern forests are going through the
later stages of forest succession, and a shade-tolerant hardwood species like maple
fares especially well in this kind of environment. Sugar maples occupy over 31
million acres of land within their range and make up 9% of total tree density in the
Northeast,\textsuperscript{21} accounting for over 50% of the basal area (total diameter coverage) of
Northern Hardwoods stands.\textsuperscript{22} This prevalence may be attributed both to the natural
competitiveness of the maple, as well as, perhaps, the influence of decades of
selective forestry. Studies conducted over many decades have shown that maples are
now more lucrative when tapped for sugar than when they are cut down for lumber.\textsuperscript{23}

Since the early 20\textsuperscript{th} century it has been common practice for sugarmakers to groom

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\textsuperscript{21} Wray, "Silvics of North America."
\textsuperscript{22} Robert P. Long Stephen B. Horsley, "Sugar Maple Ecology and Health: Proceedings of an
\textsuperscript{23} As Dr. Perkins described it in our interview, “There’s usually a study every 10 years that
looks at comparing the income that you can generate from maple either as maple syrup or as
wood products. It’s usually commissioned by some forestry organization. And it turns out
that wood products always fall far below maple syrup production. And so that study is
shelved and never referred to again… Until ten or twelve years later, somebody things it’s a
great idea to do another study.” Perkins, Timothy. Interview by Eleni Healey. Tape recording.
Underhill, VT, August 3\textsuperscript{rd}, 2010.
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their stands to contain almost nothing but sugar maple trees, thus creating a monoculture effect through selective thinning.\(^{24}\) The following table, compiled by Gordon G. Whitney, demonstrates relative estimates for the concentration of sugar maples within forest compositions throughout its range from pre-settlement times and modern times. The table shows a marked increase in the overall predominance of sugar maples in the landscape since pre-colonial times, a shift which can be attributed to several causes. Hypotheses cited by Whitney include the cessation of the regular Indian burns, which tended to eradicate fire-intolerant maples,\(^{25}\) as well as the maple’s natural adaptability to colonizing forest structures, whether in open or heavily wooded areas, due to its prolific seeding and shade tolerance.\(^{26}\) Surely the selective nurturing and intentional plantation of sugar maples for the purpose of sugaring had some impact on these levels of prevalence, but there is no direct evidence to support just how much of a difference such intentional alteration had on the numbers cited.


The most important reason for the creation of the “maple plantation” was, of course, to increase the efficiency of sugaring by improving the yield of sugar from each tree. Not only was the regrowth time too slow for any tangible advances to be made through breeding, but by the time the first serious plantation efforts by Taylor, Marvin and others came to maturity, sugaring technologies had advanced to the point where sugar yields could be increased almost twofold simply through mechanical improvements. Thus as the sugaring industry began slowly catching on to vacuum-pressured tubing systems, oil- and gas-fired evaporators, and reverse osmosis water extraction techniques, the quest to cultivate the perfect tree was happily abandoned—and researchers turned their attention to testing and inventing new sugaring technologies, which I will discuss in depth in the next chapter.
Maple sugaring research historically has not only focused on pushing the limits of sugaring tools and technologies, but also on solving many of the environmental problems that have arisen threatening the health and longevity of maple stands. A maple producer can only be productive if his sugarbush is thriving. In the early 20th century, the crucial question revolved around cattle grazing and stand reproduction. Many sugarmakers during the first half of the 20th century were primarily dairy farmers or farmers of other kinds whose operations depended on grazing animals. These sugarmakers were concerned with the effect that grazing animals might have on the viability of maple saplings in their sugarbushes. An 1884 study by F. B Hough states that “a sugar bush ought not to be pastured, as cattle destroy the young growth, and the ruin, although it may be remote, is certain.”

Further support for this opinion was offered in a 1943 study conducted in maple groves in Lorain County, Ohio, by botanists at Oberlin College. Their research indicated that “the quality of these groves was suffering from the fact that they were being used as pastures… one of the most serious sources of economic waste in the North Central States is the grazing of woodlands and consequent destruction of undergrowth, including seedlings.”

Later in the 20th century, maple researchers began to see an alarming trend of what appeared to be random die-offs of maple stands which occurred throughout the Northeast and, especially in Southern Quebec, in Canada. Starting in the 1960s, researchers began to observe and report reductions in tree-ring width in sugar maple trees, a phenomenon that several researchers were attributing to acid rain and

associated mineral depletion in soil composition.  The phenomenon of acid rain has more recently been dismissed as a substantive cause for the areas of decline observed by researchers, abandoned for more dynamic theories encompassing drought resistance, overall nutrient composition and predation by disease and insects. The models for determining causation in maple dieback or decline are numerous, but there is a common thread in many studies that suggests that much of the stress is being caused by human alteration of and damage to the soils and climate patterns inhabited by those stands. These various hypotheses surrounding the connection between human-effected environmental alterations and the health of sugar maples mark an important beginning to a growing industry awareness of the link between a degrading and changing environment and the long-term stability of maple sugaring.

Sugarmakers today are confronted with many challenges to the longevity and productivity of their investments, as sugarmakers have been throughout the history of the industry. Today, however, there are two issues in particular that concern all sugarmakers. These are environmental issues that threaten to severely debilitate, or in some places even destroy, the stands of maples upon which the industry depends, and for which modern science has provided no clear solutions to date.

The first of these threats, the subject of much debate and controversy within the sugaring community—as well as in the American public at large—is global warming or “climate change.” For an industry so heavily dependent on the health and longevity of a wild species of tree that -- as has been shown by the repeated diebacks

throughout the second half of the 20th century to be particularly susceptible to large-scale human climatic interference -- global climate change presents a very serious challenge. The issue is two-fold; not only do sugarmakers need to maintain a healthy, living sugarbush, but they also require the very specific weather patterns that cause the pressure changes that in turn encourage sap flow. Increases in temperature over the past few decades have already affected the timing of the sugaring season, accelerating the start up to a month and making it much shorter in duration than it has traditionally been within the memories of sugarmakers and maple researchers.

Dr. Perkins has been researching the intersection of global climate change and the maple industry for some time now, examining the possible effects that an increase in temperature would have on the long-term viability and sustainability of sugaring operations. Through research at the Proctor Center, Perkins tested out several theories, to try to determine why the sugaring season is coming earlier and lasting for a shorter period of time. In an interview in the New York Times in 2007, Perkins reported that “we had this long list of factors we started with that could possibly explain it.” But, after the research was complete, “we have eliminated all of those various factors. We are convinced that it is climate influenced.” Perkins claims that, "One hundred to 200 years from now . . . there may be very few maples here, mainly oak, hickory and pine. There are projections that say over about 110 years our climate [in the Northeast] will be similar to that of Virginia." 31

The threat of climate change has some Vermont sugarmakers scared stiff, while others are a little more laid back about it all. According to Burr Morse, a 7th

generation sugarmaker from Montpelier, it all depends on how closely one is willing
to examine the facts. Burr is known throughout the state as an excellent sugarmaker,
a wonderful writer, and one of the best tourist magnets around. The Morse
sugarhouse is an extremely popular tourist attraction, which attracts more than 400
tour buses to the property every year, whose passengers want to learn about the
sugaring operation, and most importantly, to buy syrup. Burr knows sugaring, and he
knows how important it is not only to his own business, but to the Vermont economy
as a whole. If sugar maples in Vermont were to stop producing syrup, Vermont
would lose one of its most powerful economic engines, both in brisk sales of syrup
and in the number of tourists it brings to the state, whose money flows into all
different areas of the state economy.

I went to visit Burr this summer at the Morse Farm and heard his views on the
global climate change issue. The summer is a low point for sugaring tourism, but as
we sat talking on the porch of the store, we saw several cars full of people pull in to
visit the sugarhouse. Burr is a rather soft-spoken man, voicing his opinions in a
careful and thoughtful manner. He says,

There’s two different types of sugarmakers. Most of them are of the type they
walk around like that [puts blinders around his eyes] and they say, what global
warming? there’s no problem. Everything’s fine. And then there’s others
who are willing to look at it. I was in the latter group, I guess . . . One
expression I use is where sugarmakers are the canary in the mineshaft for
weather amongst farmers. Because we I mean if you’re raising grain in the
Midwest, or citrus in Florida or something, yes you’ve got to have pretty
much the right weather. But if you’re a sugarmaker in Vermont you’ve got to
have nights that go down in the mid twenties, days that go up in to the mid
40s, not colder not warmer. We need just the perfect weather, and I don’t
think we necessarily get it any more. . . I think we are seeing a change in the
climate with the fluky weather like high winds, sudden winds, torrential
downpours, stuff like that. And it all will affect maple.32

As Burr points out, sugarmakers are in a unique position to experience the effects of any kind of broad-scale climate changes. Because of the intricate interdependence of temperature and sap flow, the sugaring season can act as a kind of bellwether, registering even micro-scale changes in weather patterns on a year to year basis. And maple stands that might get blown down in a sudden windstorm would take up to 50 years to regrow, if indeed the climate conditions were even still favorable to maple repopulation.

Burr mentions that there are sugarmakers who are skeptical of the threat posed by climate change, the extent of that threat, or even the existence of a threat, of a significant change in climate. Among those whom I interviewed, however, most had an appreciation for the impermanence of climate and the potential for the disappearance of the maple, even if they did not subscribe to all of the scientific research on human-initiated, broad-scale climate change. One of those skeptical sugarmakers was David Hartshorn, a man whose sugaring business is just one of many agricultural occupations he pursues on his farm in Waitsfield, Vermont. When I stopped by his farm for an interview in August, Hartshorn was in the middle of picking blueberries, and I was obliged to help him harvest his berries in return for answering my questions. We spoke as we walked among the berry thickets, plucking quarts upon quarts of plump dark fruit. During such an exceptionally bountiful year, it isn’t hard to see why Hartshorn might not worry too much about the future. His struggle is just to find enough hands to bring in all of the fruits and vegetables flourishing in his fields. For a part-time sugarmaker like Hartshorn, it is easier to
suffer the slings and arrows of a bad sugaring season in stride—and to contemplate
the possible decline, and perhaps demise, of the sugaring industry with, perhaps a
little bit of distant regret—rather than with the impending panic of career
sugarmakers, and tourist hounds like Burr. Indeed, Hartshorn prefers to take the long
view on climate cycles, acknowledging that the forces of broad climatic change can
alter weather patterns devastate vegetation landscapes— all the while remaining
unfazed by the global warming hype:

A lot of people have jumped on the global warming bandwagon…. But I think
the earth is just returning to a period of what it was before the mini ice age
occurred, which is what we’re in now. See, France during the dark ages, all of
a sudden these glaciers started coming down, right? And Greenland became
very cold. You know, I’ve read stories of them Vikings right there having
grapes! So, I think that things got cooler for a period of time in various
places. Now that it’s starting to go back to what it was before it started
getting cooler, people are on notice. As far as the maples, you know, that’s a
constant succession. I think we’re just lucky enough to have ‘em here for a
period of time in the world, and then something else will take their place,
probably.33

Hartshorn is not alone in his doubts about the global warming debate. One of
the oldest sugarmakers I met—and arguably one of the most knowledgeable about the
industry and its history—was a man named Bill Clark. Bill was for many years the
president of the Vermont Maple Sugarmaker’s Association, and he can talk for hours
about the history, ecology, politics, economics and technologies of sugaring without
ever running out of things to say. When it comes to the issue of the future of the
industry and climate change issues, Bill is wary of what he considers the
oversimplifications made by climate scientists and supporters, and the tendency to

33 Hartshorn, David. Interview by Eleni Healey. Tape recording. Waitsfield, VT, July 20th,
2010.
voice pat generalizations about issues that should be treated as complex and unpredictable phenomena. He mentions that

Some guy writes this whole article up telling about there’s hardly a maple tree left in Virginia. Well, what? Where’ve you been? “There’s hardly a maple tree in Virginia.” Thomas Jefferson risked his life to come to Vermont, and took the maple tree back, and he planted it at Monticello. The tree is still living down there now.

And, of course, maples have never historically been a hugely successful or widespread tree in Virginia—as Jefferson discovered from the failure of most of the maple trees he attempted to plant at Monticello, barring the one that still stands. Bill makes a convincing point about the somewhat careless way that some climate change supporters can sometimes treat the facts, in order to create a vision of history that fits perfectly with the climate change story. However, despite his doubts about the extent to which climate scientists can use historical sugaring trends to denote established climate effects, Bill does believe that it is better to err on the side of caution. He urges sensible climate policies, in light of the potential threat to sugaring in the future. “I’m not that convinced it’s that simple,” he confided. “But it’s obviously something people need to keep on top of.”

Many sugarmakers who are aware of and concerned about the effects global warming might have on the future of sugaring, have proposed that vacuum system technologies—which allow sugarmakers to extract more sap from the tree even when the perfect freeze-thaw patterns causing natural vacuum fluctuations do not occur—can compensate for climate change. For sugarmakers like Peter Purinton, technology is the answer to the climate change debate. Purinton has been sugaring since he was a

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little kid, and has never had another “real job” in his life except sugaring under his own direction. Purinton grew up at the right time, and quickly took advantage of the latest technologies in vacuuming, tubing and boiling, which have so greatly improved the industry over the last four decades. He sees the historical trend of sugaring seasons moving earlier in the calendar as being caused not by temperature change, but by the extension of the season by sugarmakers who begin tapping trees earlier in order to take advantage of sugar runs that their forebears did not have the time, the labor or the technology to process. When it comes to predicting the future, well, that’s another matter; like others, he tends to put on the blinders when it comes to what climate change may bring down the road:

I do feel sugaring is started earlier than it used to. But some of that might be because I can start earlier too with tubing. As far as some of the hype about [climate change], I think some of it is producers are concerned because they are making syrup earlier. But they never made it back then, it was available, they just never caught it. It does seem [the sugaring season comes] earlier, but I think it’s that I’m making it earlier. So, I’m not real concerned about it because my sugaring days are coming closer to an end all the time. I’d love to sugar till I’m 90, but I know the amount of labor that goes into it.35

Although studies have not yet determined the exact extent to which vacuum technology will be able to overcome the shortening of the sugaring season due to warming trends, there is a kind of endgame where—if sugar maples do not ever endure a hard freeze—there simply won’t be any natural creation of the special kind of vacuum pressure that starts the sap flow in the first place. It remains to be seen whether new technologies might be invented or evolve to solve that issue.

The bottom line is that no one can clearly predict now what kind of effect
global climate change might have on the dynamics of sugar maple stands throughout
the Northeast. However, there is no doubt that any significant temperature rise or
increase in severe weather patterns could have a disastrous effect on the long-term
viability of larger sugaring operations, if not from the standpoint of overall sugar
maple viability, than certainly from the standpoint of economic sustainability. Small-
scale sugaring may continue to produce sugar in quantities sufficient for the use of
local neighborhoods, but if the overall dominance of maple among the Northeastern
forests is threatened, the future of the larger sugarbushes seems doubtful. If the
predictions of significant temperature rise are accurate, it is likely that even if maples
are able to survive the higher temperatures, many sugaring areas might simply stop
experiencing the above and below freezing temperature fluctuations that are required
for sap flow. Vacuums will be able to take sugaring only so far, in the event of
severely foreshortened sugaring weather patterns. Despite all the models out there, it
remains unclear to what extent climate change will act upon our living environments
in the foreseeable future; it also seems that the array of viewpoints expressed by just
one small sampling of sugarmakers demonstrates how hard it is to generate consensus
on a phenomenon that is, by definition, large-scale, unpredictable, and, as yet, only
roughly modeled, because there are simply too many factors involved in the
calculation.

If we are to subscribe to the growing consensus in the scientific community
that climate change is going to have some effect—and it will probably be
significant—we should acknowledge the role that sugarmakers can and have played
in mitigating those trends. Sugarmakers and maple scientists have struggled to
determine the best solutions, both for understanding and for solving the problems that
global climate change could cause for their industry; but in the end, they, like
everyone else, can feel as if they are largely being held hostage by the political trends
that are being exhibited by the world’s societies in their actions, or inactions, toward
the environment. If sugarmakers are indeed the “canary in the mineshaft,” we can
only hope that its song may help inform the public dialogue concerning our
environmental behaviors.

New Hampshire-based Clean Air-Cool Planet—an environmental
organization dedicated to “solving the global warming problem through civic
engagement, education and effective policy”—has taken steps to motivate the public
to help solve climate issues, using maple syrup as a marketing tool to attract attention
to the initiative. This campaign, which it calls “Save Our Syrup; Stop Global
Warming,” draws together statistics about warming trends and yearly levels of sugar
production, and intersperses them with popular articles from across the Northeast that
hint at the connection between global climate change and the fate of sugaring. The
campaign definitely aims to pluck on the heartstrings of American consumers, by
drumming up iconic images of the changing foliage, of syrup on blueberry
pancakes—and of the traditions of sugaring that for many people contribute to
defining American culture.

36 Articles connecting maple sugaring and fall foliage to the debate on climate change are
numerous. To name just a few: Belluck, Pam. March 3rd 2007. Warm Winters Upset
It's Maple Syrup Time, so Why the Whiff of French Fries? NY Times. 28 April 2007. And
2005.
Despite all the hype surrounding climate change, the threat of warming trends and environmental alterations almost seems like child’s-play when compared with the most universally dreaded nightmare: sugarmakers practically cower at even the mention of the Asian Longhorn Beetle, an incredibly destructive, maple-loving insect species. Thought to have been imported from Asia in the wood of untreated shipping pallets, the Asian Longhorn Beetle is an invasive species that favors hardwoods, especially maple, as a host both for nourishment and for incubating its young. The Asian Longhorn Beetle was first detected in the United States in Brooklyn, New York, in 1996, and in Chicago in 1998, where a devastating infestation precipitated the wholesale cutting of many acres of forest land in the Chicago area.

On the issue of Asian Longhorn Beetle there is little debate; it is scary, it could wipe out whole regions of sugaring land, and no one has really figured out how to stop it. Burr Morse said, “it’s the biggest threat we have.” Eastman Long admitted, “I’m very nervous. Asian Longhorn Beetle is really serious.” Paul Cate believes “there’s a pretty big chance we’re going to get nailed.” So, it is clear to see the mood is dire, and it is no surprise considering the scarcity of remedies and the proximity of this grave threat to prime sugaring regions.

Asian Longhorn Beetle kills its host trees by eating away at the outer sap wood, chewing out long, hollow channels through the wood. The females carve out dime-sized holes in the bark into which they deposit their eggs, which develop inside the wood and continue to feed off of it. The beetle does not instantaneously kill its host trees; it usually takes around 5 to 10 years for a tree to show serious signs of
injury. Since the damage the insect does to the tree is carried out so slowly, new outbreaks are hard to detect until they are quite serious.

Because of the kind of burrowing behavior that the Asian Longhorn Beetle exhibits, underneath the bark of the tree, pesticide treatment is not an option for eliminating them. Since it is a foreign species it has no natural predators, and without human intervention it can spread unchecked as long as there are forests to feed upon. The only somewhat viable method of control is to identify and eradicate any and all trees found to be infested with the beetle. In order to stop the spread of infestation in Chicago, workers set up a 1.5-mile perimeter around the suspected infestation area, and checked every tree for signs of the beetle. All trees found to be infested were destroyed (cut down and burned).

![Figure 4: Asian Longhorn Beetle](image)

Asian Longhorn Beetle is a slow moving insect, which tends to spread and infect large numbers of trees in a limited area, before they are moved through outside influence. Just as the beetles arrived via human shipping transport, the only way the
beetle is likely to move around inside the United States is through humans moving lumber around. This movement of lumber is a great concern; any innocent and unsuspecting camper who happens to transport a load of firewood from an infested area into a new location can trigger a new infestation. The real threat to the sugaring community is the current ongoing infestation in Worcester, Massachusetts, which is dangerously close to the heart of sugaring country. That infestation has been tracked since August, 2008, and has already resulted in the removal of thousands of trees.

The challenges to the future of sugaring in the Northeast posed by the Asian Longhorn Beetle and global climate change are serious, and doubtless both topics will continue to be the subject of serious, dedicated efforts by scientists and sugarmakers alike in an effort to protect the tree which has become such a crucial element of the forest landscape, as well as our material culture. The future of the industry relies on the continued viability of the trees. These two major threats are potentially devastating; even our most advanced science and technologies might not be able to save the maple sugar industry in the Northeast. However, sugarmakers and maple researchers continue to make every effort to promote sustainable and healthy sugarbushes in order to preserve this valuable cultural and ecological resource and keep the industry profitable.
Tapping Sap, Boiling Sugar
The Development of Sugaring Technologies

Let one who has used the modern improvements of the most approved pattern, go back to the mode of our fathers; let him have the cauldron kettle, the potash kettle, the five pail and the three pail kettle hung on poles, and watch them by day and night, with nothing to shelter him from storms; let the wind blow, and fill the boiling sap with ashes and dust, and his eyes with smoke, let him mount his snowshoes and bring in all his sap to the ‘boiling place’ upon his back, and if he finds poetry in it, I think he will say, I prefer prose hereafter.

--E. A. Fisk, 1874

Over hundreds, if not thousands of years, human beings have developed ever more efficient and sophisticated ways of drawing sap out of the sugar maple and transforming it into a sweet source of sustenance. Humans arrived in the Americas around 12,000 years ago, and while the exact origins of their discovery of sugaring are lost in prehistory, during thousands of years of occupation the descendants of the earliest human settlers to North America developed sugaring technologies that allowed them to generate a concentrated, transportable sugar product that could sustain communities through the lean months of late winter foraging. European settlers imported the tools and the mindset necessary for exploiting maple sugar as a market commodity. By the middle of the 20th century, however, sugaring technology was still relatively primitive, depending on natural climate fluctuations to release the sap, and boiling the sugars down through simple wood-fired heat application.

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techniques. Sugaring remained largely a sideline business conducted by farmers otherwise invested in dairy farming or in other forms of agriculture.

In the last 40 years, however, sugaring technologies have advanced rapidly. Sugarmakers have adopted efficient and cost-effective extraction and concentration techniques that have allowed many sugarmakers to increase their production and transform hobby and local-type operations into large-scale, full-time businesses. Companies that market and sell sugaring equipment today, stock warehouses filled with highly modern machinery and millions of dollars worth of merchandise. Sugarmakers are capable of tapping 10,000 trees and more with the help of only a few hands and some heavy-lifting equipment to carry out what was once the grueling labor of tapping, gathering and boiling the sap. The sugaring technologies of today are far from what most people imagine when they think of the traditional maple syrup making process, an image that is firmly rooted in the primitive pioneering tools and techniques of pre-1950s sugaring technologies.

As the range of the sugar maple cover over 31 million acres, and as evidence suggests that, at one time or another, humans have made sugar almost anywhere the trees will grow, it is not easy to write an overview of the evolution of sugaring technologies without leaving out some crucial information or without making some broad generalizations about the development of techniques which may depend heavily on the influence of specific regional and temporal zones. That said, I hope to give the reader a brief survey of the way that sugaring has evolved as an industry, with the aggregation of technologies that have developed across community and

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38 Wray, "Silvics of North America."
cultural boundaries, in order to explore in more detail the kinds of operations that drive the industry today.

It is important to explain, before moving on to the nitty gritty of tools, techniques and machines, what exactly is meant by sugaring. Maple sugaring has two essential steps; first, extracting the sap from the tree, and second, reducing the sugars into a more concentrated form for consumption. This may seem too obvious to even merit explanation, but having met a goodly number of people convinced that maple syrup comes out of the tree ready to eat, I figure I might as well clear that one up sooner rather than later. When maple sap comes out of the tree, it is just that—sap. By which I mean it is a clear, almost tasteless liquid which requires huge amounts of evaporation to begin to resemble syrup or sugar. Indeed, it takes a shocking average of 40 gallons of sap to produce just one gallon of standard maple syrup. Getting that much water to evaporate is no small feat, especially if you’re working without any metals, like the earliest American sugarmakers. Equipped with only wood, stone, clay and ingenuity, Indian sugarmakers solved the problem of sugaring with some pretty clever tricks.

The origins of sugaring among the earliest human communities in the Americas lie shrouded in the realm of myth. Lack of a written history that establishes the first discovery and the subsequent development of maple sugaring among those early communities in the Northeast has generated a vigorous debate over the basic facts about the sugaring traditions that prevailed prior to European arrival. One main point of contention is whether or not Indians actually concentrated the sap down to a syrup or a hard sugar, or simply used the raw sap as a beverage. While surely the first
human consumption of maple sap was in its raw form, most evidence today points to an Indian origin of sugaring techniques that were designed to draw the sugars out of the dilute sap.

It is unclear whether humans actually were the first sugarmakers, per se. In recent history the basic activities of gathering, concentrating and harvesting maple sap—which constitutes our functional definition of “sugaring”—have been witnessed among squirrel populations. A study published in 1992 in the *Journal of Mammalogy* describes observations made in Western Maine of red squirrels performing what can only be described as systematic, purposeful sugaring of sugar maple trees. According to the study abstract,

Red squirrels, *Tamiasciurus hudsonicus*, were observed systematically harvesting sugar and syrup from sugar maple trees (*Acer saccharum*) in a mixed stand of young hardwood trees in Western Maine. Each tap consisted of a single pair of chisel-like grooves of an apparent single bite that punctured the tree to the sap-bearing xylem. The dripping dilute sap was not harvested. Instead, the squirrels came back later and selectively visited the trees that had been punctured after most of the water from the sap had evaporated. The characteristic tooth marks left by sugaring red squirrels were observed at 22 other sites in Maine and Vermont.39

The squirrels observed by the author demonstrate selective tapping of sugar maple trees only, and only during the early springtime, the known period of sap flow in sugar maples. If squirrels all over Maine and Vermont display such obvious sugaring behaviors, and if this species has been living on the North American continent longer than humans have been around, who is to say that they have not been sugaring longer than any human community has?

According to one of the popular tales on the human origin of sugaring, an Iroquois legend, humans did learn how to sugar the maple trees directly from squirrels. A youth watched a squirrel one day as it broke a twig off of a maple tree and licked off the sap. The youth imitated the squirrel’s behavior, and found the sap sweet to the taste. Legend tells us that this youth went on to become the first human sugarmaker.

Sugaring legends are relatively common among tribes belonging to the Abenaki nation, the coalition of tribes whose ranges spanned New England, Quebec, and the maritime provinces of Canada. One of the most common legends describes the accidental discovery of the sweetness of maple sap, and gives an explanation for why the sap must be reduced to produce a sweet sugar. This retelling comes from an 1891 anthropological account, written by A. F. Chamberlain:

One day Nokomis, the grandmother of Manabush, was in the forest and accidentally cut the bark of a tree. Seeing that a thick syrup exuded from the cut, she put her finger to the substance, and upon tasting it found it to be very sweet and agreeable. She then gave some of it to her grandson, Manabush, who liked it very much, but thought that if the syrup ran from the trees in such a state it would cause idleness among the women. He then told Nokomis that in order to give his aunts employment and keep them from idleness he would dilute the thick sap. Whereupon he took up a vessel of water and poured it over the tops of the trees, and thus reduced the sap to its present consistency. That is why the women have to boil down the sap to make syrup.40

Chamberlain’s account of the legend describes the discovery of the sap’s sweetness as the serendipitous result of an accidental wound to the sugar maple bark. It is likely that such an accident brought on the earliest form of sugar-making performed by Indians.

Indian sugaring methods gained much sophistication following these early, semi-intentional sugaring episodes. Using the materials available to them—mainly stone- and wood-carved implements—different communities developed various methods of gathering and concentrating sap. The techniques varied from community to community, but the basic principles were essentially the same, coming from a shared sugaring heritage and exchanged by groups who shared many technologies through social and economic interactions.

Tapping the trees was the first work of the sugaring season, and the methods took many forms. In general, the tapping was a crude affair, with little care taken for the long-term survival of the tree. After all, there were more maple trees than these communities could ever use, and the wood of a dead or damages tree would be used for other purposes. The Indians might simply break off twigs and branches, or cut into the tree with a sharp object, like a tomahawk. According to an account in the Western Abenaki tradition, “the women and children tapped the maple trees. To do this, a diagonal slash was made on the tree, into which was inserted a hollow elderberry twig.”\footnote{William A. Haviland and Marjory W. Power, \textit{The Original Vermonters: Native Inhabitants Past and Present} (Hanover and London: University Press of New England, 1994), 163.} The twig acted like a simple spout, directing the sap away from the tree so that it would not flow and harden against the bark. A variety of different kinds of spouts and taps have been described by different tribes, made of various available types of wood.

Sap dripping from the wooden taps was collected in water-tight baskets, usually made of birch bark, which were laid on the ground beneath the taps. As reported by W. J. Hoffman, “During the early spring, when the birchbark is in prime
condition for peeling, pieces were cut and folded into sap dishes or pans, each measuring from 7 to 10 inches in width, about 20 inches in length and 8 inches in depth. The ends were carefully folded and stitched along the edge with thin fibres of basswood bark or spruce root, in order that it might retain the shape.\textsuperscript{42}

Once collected, the raw sap would be processed using one of a several different methods, depending on the time, place and community in question. The simplest method, and likely the first to be discovered, involved letting the sap freeze overnight, drawing much of the water off as ice on top of the lower freezing-point sugar solution. The ice would be removed, leaving a concentrated sugar solution beneath. This method is reminiscent of the technique practiced by the red squirrels; both species engage with the natural environmental conditions to effect the concentration of the sap.

A more precise method of sap reduction described in the Abenaki tradition involves applying direct heat to heat-resistant containers, such as hard-fired pottery or dampened bark baskets. Lacking iron kettles prior to European arrival, native sugarmakers must have found boiling on direct flames a tricky process, but when the fires were kept to a manageable heat, and the vessels kept moist, there was little risk of a vessel cracking or catching fire. The pots were suspended over the fires with grape vines, which were liberally covered in damp clay to prevent their catching fire.\textsuperscript{43}

The most commonly cited method of sugar concentration involved boiling the sap by indirect heat in a hollowed-out log, usually made of basswood. This method involved dropping rocks pulled out of a hot fire into the raw sap, which would start to

boil and steam from the heat released by the rocks. Not just any rocks were used for this purpose; many rocks, subject to the high levels of heat in the bed of a large fire, would actually explode. The boiling rocks were specially chosen, then, and carefully protected and preserved over generations of sugarmakers. In the journals of his travels on the North American Continent in 1555, renowned Spanish explorer Alvar Nunez Cabeza de Vaca recounts his experience with the rock-boiling technique:

Their method of cooking is so new, that for its strangeness I desire to speak of it; thus it may be seen and remarked how curious and diversified are the contrivances and ingenuity of the human family. Not having discovered the use of pipkins [kettles] to boil what they would eat, they fill the half of a large calabash with water, and throw on the fire many stones of such as are most convenient and readily take the heat. When hot, they are taken up with tongs of sticks and dropped into the calabash, until the water in it boils from the fervor of the stones. Then whatever is to be cooked is put in, and until it is done they continue taking out cooled stones and throwing in hot ones.44

This method of boiling has been recreated today by several different groups and individuals eager to attempt mastery of these ancient techniques. The following pictures were taken at a recreation performed at the Beaver Meadow Audubon Center in North Java, New York. As difficult as it is to imagine that such an operation could create hard sugar out of dilute sap, these techniques really do work, with enough patience and a hot enough fire.

44 Alvan Nunez Cabeza de Vaca, La Relacion Y Comentarios Dos Jornados Qui Hizo a Las Indias (Valladolid, 1555).
While this technique has been proven to work, it is not for the amateur, or the faint-hearted. One curious Vermont sugarmaker and forester, Paul Cate, attempted to mimic the log and rock method, achieving mixed—and sooty—results:

I’d read about how they heated the sap in a wooden receptacle you know with hot stones. I said you know that’d be interesting to try. Seems like an impossible way to do maple syrup. So I figured well I’d try it. So I took my
chainsaw, and I had a piece of basswood log, and I hollowed it out. I had some round stones that I had found in a brook. Then I cut two or three forked sticks, and built a fire out in the driveway, and dumped some sap into this basswood pot, if you will. We heated up those stones, got ‘em good and hot. Then we’d pick up a stone with two forked sticks, and go over and dump it in. Course it would fizzle and steam some. We did this for probably two and a half hours. Hehehe. We finally decided well, maybe we’ll try tasting this stuff. By then, surprisingly, it was actually boiled off enough water so we had what sugarmakers would call sweet stuff. It was a ways from being syrup, and it was pretty smoky tasting, and I guess you’d have to call it a little bit sooty, but it was sweet.45

While Paul was obviously performing the technique in an amateur fashion, it is still important to emphasize his point about the sootiness of the syrup that he produced using the log method. Due to the high levels of contaminants that would likely have gotten into the sap from the gathering in open baskets to the boiling of the sap in broad, open-air containers with rocks drawn from the ashes of a hot fire, the sugar that Indians produced was likely quite black and sooty compared to what we know today as maple syrup. The stuff would be sweet, nonetheless, and a welcome addition to a lean diet after a long winter of scant foraging.

During the boiling process, the sugar was stirred with a wooden paddle in order to prevent the sugar from burning, and to create something of a granulated consistency in the finished product. In order to store and transport the finished hard sugar Indians fashioned birchbark containers called Makaks, which came in many shapes and sizes, and ranged from the most plain and simple functional pieces, to quite ornate objects which could be used in trade or exchanged as gifts.

The earliest European settlers in many areas lived practically side by side with Indian communities, and in many cases engaged in trade with them, exchanging European tools for Indian expertise about the land and the resources available on it. For new settlers, adjusting to the harsh New England climate would be tough, but one of the first signs beckoning to them in the new spring would be the start of the sugaring season. Maple sugar was one of the first crops new settlers produced and distributed, a replacement for the increasingly familiar cane sugar, which was unobtainable beyond the fringes of settled New England communities. Early European sugarmakers learned their techniques directly from Indian instructions about tapping the trees and boiling the sap.

For a more detailed understanding of changing sugaring technologies, let us start back at the source of the sugar, the tap hole. As described earlier, Indian sugarmakers were accustomed to slicing through the bark and into the sap wood,
making large incisions out of which the sap would flow, and for the most part were unconcerned that they might be causing great injury to the sugar maple during tapping. This method killed the trees in short order, but with a seemingly endless supply of sugar maples and an equally endless demand for firewood, Indian communities were comfortable with this situation. The earliest European sugarmakers were also largely content to use whatever means seemed to provide them with the most sap. Many relied on a method called “boxing,” wherein the sugarmaker used a chisel and a mallet to cut a square chunk of wood out of the trunk of the tree, through which the sap would flow.

With trees rapidly becoming scarcer because of more widespread agricultural settlement, sugarmakers slowly became more conscious of their methods of tapping the sap, looking for less intrusive alternatives to the rough “slash and gash” methods inherited from the Indians, or the deep, lasting wounding caused by “boxing.” By the latter half of the 19th century, this form of boxing had been publicly recognized as a barbaric practice, one which was unsustainable given the limited forests left to sugarmakers after the rampant timber harvesting that had preceded the agricultural revolution. In 1869, Solon Robinson admonishes any sugarmakers who still box their trees that: “chopping great, rough holes into trees to get the sap is as foolish as killing the goose that laid the golden egg.”

By the late 19th century, sugarmakers slowly started switching to using an augur to drill a smaller, more precise hole into the tree. The injury caused by these smaller tap holes was much less extensive, and generally allowed trees to largely heal.

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over by the following tapping season, thus allowing sugarmakers to sustainably tap the same trees for a much longer period. There were still limits, however, to how many tap holes could be made in one tree, and to how early in its lifetime the tree should be tapped. Even small tap holes can cause damage to sapwood, from moderate to extensive. Tap holes never completely heal over, no matter how small they are. Given enough time, the hole will be overgrown by newer, living wood, but the hole remains.

Figure 10: Cross-section of a sugar maple tapped for many years. Each notch represents a single tap hole. Fox Run Farm, East Montpelier, VT. Personal photograph by the author. 19 Jul. 2010.

Once the sap was flowing, the sugarmaker would gather it in buckets made of wood and carry it through the forest to the sugaring camp. Until the production of sheet metal became more practical and widespread, sugarmakers stored their sap in troughs fashioned of hollow logs, reminiscent of the boiling troughs of the Indians.
Getting around the woods in the melting snows of late winter has never been easy, and hauling heavy, sloshing sap through these conditions could make it no easier. In order to ensure the best quality sugar, it was important that each bucket be emptied at least once daily, so that the sap would not ferment or get contaminated while sitting around in the woods. Sugarmakers could either gather the sap by hand, or use a shoulder-yolk, with which they could carry several bucket’s worth of sap. Some families had access to horses or oxen, with which they were able to travel through the woods, drawing a trough upon a sled.

In the early years of their settling in the Northeast, Europeans made one crucial contribution to the technology of sugaring – and benefited all subsequent generations of sugarmakers: instead of boiling their sap in delicate earthenware, or enduring the tedious process of stone and log boiling, Europeans introduced sturdy iron kettles that could boil the sap much more easily and more quickly. These iron “trade kettles” were multi-purpose, and almost any farmer had one of these in his/her small store of implements possessions. In a 1789 article with “Advice to farmers about to settle in new countries,” one of the primary suggestions was that these settlers should bring along “a large kettle, in which you may make maple sugar in summer, and pot-ash in winter.” Indians swiftly adopted iron-kettle-boiling technology as well, making it a regular part of universal sugaring practices.

Until the mid-19th century, most sugarmakers performed their early spring sugaring completely out in the open; the sugar produced was subject, from tree to kettle, to any number of contaminants that could affect the taste and appearance of the final product. Open sap-collecting devices might get choked with snow, dirt or fallen
leaves. Open-air kettles might get filled with soot and ash during boiling. These hygiene issues were problematic, since one of the major selling points for maple sugar, especially during the boom times of the turn of the 19th century, was supposedly that maple sugar could be made more cleanly than could West India cane sugar. According to a 1790 article from the *New York Journal*,

Maple Sugar . . . is made by the hands of freemen, and at a season of the year when not a single insect exists to mix with and pollute it, whereas the West India sugar is the product of the unwilling labor of negro slaves, and made in a climate and in a season of the year, in which insects of all kinds abound, all of whom feed upon and mix with the sugar, so that the best India sugar may be looked upon as a composition, consisting of the *juice* of the cane—and of the *juices* or excretions of ants—pissmires—cockroaches—borers—Teas—mosquitoes—spiders—bugs—grasshoppers—flies—lizards, and twenty other West India insects. To these ingredients is added, the *sweat* of the negroes, and when they are angry, nobody knows what else.47

The goal of New England maple sugarmakers, then, was to create a product that would rival or surpass cane sugar in cleanliness. The prevailing conditions throughout the early 19th century were not necessarily conducive to producing clean white sugar, however. While the *New York Journal* author claims that maple sap is free of the contamination of insects, such was (and is) not entirely the case, and there was always the possibility of fermentation of the sap if it was left unboiled for too long. Also, open-air boiling techniques persisted in some areas well into the late 19th century, perpetuating the problem of flavor contamination. By the 1790s, prominent voices including that of Benjamin Rush, were recommending that sugarmakers protect their sap throughout the sugaring process, by covering their buckets and creating shelters for their boiling kettles, which were the early ancestors of our

modern sugarhouses. In his famous 1791 treatise, “An Account of the Sugar Maple
Tree,” Rush writes,

The exposed manner in which sugar has been usually made, in the back
country, is attended with many inconveniences, especially in windy weather,
when the ashes, leaves &c may be blown into the boilers, and thereby
discolour the syrup or injure its flavor.

Rush encourages sugarmakers to take the cleanliness of their process very seriously,
using only clean implements and shielding the process as much as possible from the
intruding elements. The construction of a sugarhouse must have lent a sense of order
and permanence to a family’s sugaring operations.

Continual measurement against the sugar of the West Indies led sugarmakers
not only to improve the cleanliness of the sugaring process by protecting the sap from
contamination, but also by developing different methods of lightening the color of the
finished sugar—thereby improving its quality in the eyes of European consumers
used to judging the relative merits of refined cake sugar against coarse, common
brown sugar. The whitening of maple sugar became somewhat of an obsession from
the late 18th century through the 19th century, leading sugarmakers to engage in a
variety of interesting and sometimes somewhat questionable techniques for
“improving” their product. According to an article in the New York Farmer, those
who perform sugaring in the open, and with little respect for cleanliness, are bound to
encounter trouble with the color and flavor of their sugar, and shortcuts for
“whitening” the product are bound to fail:

In this careless and hurried manner of pursuing the business they will
unavoidably accumulate a considerable quantity of dirty foreign substances in
the kettles before it is reduced to syrup—such as leaves, sticks, ashes, and the

\[\text{\footnotesize 48 Benjamin Rush, "Remarks on the Manufacture of Maple Sugar," (New York: Morton,}
1791), 10.\]
like containing more or less coloring matter, which is extracted by the boiling, and imbibed by the sugar, rendering it of a dark color and not unfrequently [sic] of a bad flavor . . . The common practice of using milk, white or eggs and many other like substances for cleansing is condemned by some who have had much experience in the business.\textsuperscript{49}

In addition to maintaining the cleanliness of the sap, another crucial step towards producing better sugar was the invention of the multiple-kettle system of boiling. When maple sugar was boiled all in one pot, it was much harder to maintain a good consistency of sugar, since cold sap was constantly being added to the pot. Later 19\textsuperscript{th}-century sugarmakers introduced a system in which sap started heating up in one large kettle and, as it started to reduce, was transferred to a smaller kettle to boil some more. Usually the sap was then passed to a third, even smaller kettle, where it was stirred vigorously and reduced to the consistency of sugar.

In 1862, the United States appointed the first commissioner of agriculture, Isaac Newton, who released a comprehensive report on the history American crop production and history, including a section written by C.T. Alvord on sugaring in southern Vermont. The report reveals a great deal about 19\textsuperscript{th} century sugaring techniques, highlighting the most advanced processes while reflecting on times gone by. Among the most important advances made in sugaring during this period were the sugaring arch and the flat pan evaporator. Instead of using a free-standing kettle (or three) in which to boil the sap, sugarmakers now began building stone arches, under which the fire would be built, and on top of which would be placed a flat pan which allowed for greater boiling surface area, and thus increased efficiency. Alvord offers this explanation:

\textsuperscript{49} \textit{“Mode of Manufacturing Maple Sugar in the Western Part of the State of New-York,” New York Farmer 4, no. 4 (1831).}
The mouth of the arch is fitted with a cast iron frame and door. About eight inches from the bottom of the arch is a bed on which the fire is made: this floor is generally made of narrow, flat stones, with sufficient space between them for the coals and ashes to fall through. In this arrangement of the floor, the draught of air passes under and up through the fire, throwing the flame and heat against the bottom of the pans. The pans for boiling the sap are made of Russia sheet iron, and are of different sizes, holding from one to four barrels. The depth of the pans is seven and a half inches.  

Most sugarmakers throughout the 19th and the first half of the 20th century continued to gather their sap using buckets, a labor which surely never got easier or more novel as a sugarmaker gained experience in successive seasons. As early as this first agricultural report, however, C.T. Alvord records the ingenious experiments being conducted by some sugarmakers in the use of some primitive forms of tubing systems, which allowed them to use the force of gravity to bring the sap to the sugarhouse for them. Instead of hanging a bucket on each tree, sugarmakers could connect each tap to a series of pipelines—wooden, at first, and later made of metal—through which the sap could flow, downhill, towards the sugarhouse. In theory this was an excellent way to save labor; however in practice metal pipelines were brittle, leaky, and prone to falling down due to both weather and animals. Metal pipeline systems likely required almost as much labor in maintenance as they saved in gathering. Most sugarmakers continued using buckets well into the 1960s and 70s, and a good number continue to do so to this day. 

In the late 1950s the pipeline concept was reintroduced, this time based upon a more successful design that would endure. In 1959 an entrepreneurial sugarmaker, Nelson Griggs, took out the first patent on PVC pipelines for maple sugaring. The original tubing was modeled directly after the PVC tubing developed for the medical

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industries by Dow Chemical. The flexibility in the PVC pipelines made them much easier to use and less prone to blow downs and leakage. The basic construction of a pipeline system functions much like a circulatory system. Small tubes are fixed to the ends of every tap, and those small “drop lines” are all then attached to a larger “main line,” much like an artery, which extends down into the sugarhouse into a receiving tank, where the sap will await boiling.

PVC pipeline may have started as somewhat of a novelty, but by the late 20th century it rapidly became the norm for sugarmakers on any scale above small hobbyists. The efficiencies gained by installing pipeline are huge. No longer do sugarmakers have to trudge through the woods hauling buckets full of heavy sap. Sugarmakers can either hire fewer laborers, or tap more trees with the same number of workers. Instead of going out into the woods multiple times a day in the heavy snow, sugarmakers let gravity do the work for them. Sugarmakers who use the technology today are adamant about the great changes these tubing systems have brought to the industry. Many of those who consider sugaring a full-time career feel it is ludicrous to attempt to sugar with buckets, a complete waste of time and energy. Burr Morse, whose family has had eight generations of sugarmakers, was the first in his family to adopt the pipeline technique; he says there’s no turning back:

If you’re a grain farmer in the Midwest, you don’t use a team of horses anymore; you use a 300 horsepower tractor and a combine. If you’re a sugarmaker in Vermont you really have to use plastic tubing instead of buckets.

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Figure 12: PVC pipelines running through the sugarbush. Morse Farm Maple Sugarworks, Montpelier, VT. Personal photograph by the author. 18 Mar. 2011.
Not all sugarmakers are sold on tubing technology. It is telling to note that, among individuals who treat sugaring as the primary or dominant source of income in their households, tubing is almost uniformly used in their sugarbushes. Among those who are less economically dependent upon the efficiencies gained through the systems, however, there is some debate about how tubing affects the relationship between a sugarmaker and his trees. Paul Cate, a career forester, believes that much nuance is lost in understanding the performance of individual trees when tubing is used. He explains,

I guess I’m old fashioned, but you know there’s something about going to visit each tree and seeing how each individual tree is doing because trees are like people they’re individuals, some of ‘em run better than others, and some on some days they run better than others. And you know with a tubing system it all just runs into the one tank through the system and you don’t, you can’t judge whether this bush is running, this tree’s running better than another tree, or whether this tree is just stopped for the year or whatever. They’re all just tied together and it’s more like an industrial system. There’s no way to judge individuality at all.\textsuperscript{53}

Despite his qualms about tubing, Paul Cate does run about two thirds of his trees on tubing. The technology is simply too convenient to forego completely.

Almost every sugarmaker who uses PVC pipelines today also uses vacuum pumps to suck the sap through the lines. Not content simply to let the sap drip on its own, sugarmakers in the 1970s began attaching their main lines to vacuum pressure systems which literally suck the sap out of the tree, drawing as much as twice as much sap from any individual tree on a good day. Vacuum pumps allow sugarmakers to keep making syrup even on days when the weather isn’t perfect, because they create the kind of pressure that formerly happened under certain atmospheric conditions.

\textsuperscript{53} Cate, Paul. Interview by Eleni Healey. Tape recording. East Montpelier, VT, July 19\textsuperscript{th}, 2010.
conditions regulating the freezing and thawing of sap within the sap wood. Peter Purinton, an expert on all of the latest technologies used by sugarmakers today, describes the way that vacuum has revamped sugaring by redefining the relationship of the sugarmaker to the whims of weather:

The vacuum is basically tricking the mechanics of the tree. When you drill a tap hole in a tree you expose it to atmospheric pressure. It’s just like putting your finger on a straw. Pushing the straw in a glass of water—it will not fill up. There’s a pressure, but the vacuum is neutralizing it. It enables sap to flow without the perfect weather, where you had the beautiful freeze, beautiful thaw, that scenario that everybody knows makes sap run. If it should not freeze for four days, as long as it’s above freezing the sap will keep running.\textsuperscript{54}

![Graph](image1.png)

Figure 13 “Vacuum Increases Sap Yield: 50-200\% increase in sap yield using vacuum.” Reproduced from Perkins, T. (2010). Dynamics of Sap and Vacuum Flow. P. M. R. Center. Underhill, VT.

Having learned to get more syrup out of the trees with vacuums—by both extracting more sap from any given tree, and by increasing the number of days during which they could extract the sap—sugarmakers still faced one major obstacle; their

\textsuperscript{54} Purinton, Peter. Interview by Eleni Healey. Tape recording. Huntington, VT, July 13\textsuperscript{th}, 2010.
tap holes were healing up faster than their seasons were ending. Every night, when
the vacuum systems were shut off and the drop in the tree’s internal temperature
causd positive pressure back into the tap hole, sap trapped in the pipelines would
travel back up into the hole, contaminating it with bacteria that dried out the hole,
causing a “wound response,” and stopping the flow of sap. In the middle of the 20th
century, it was common practice to insert paraformaldehyde pellets into the tap hole
to prevent healing. It soon became apparent that the paraformaldehyde was not only
preventing healing in the short-term, but also causing serious long-term injury to the
tree, gradually but inexorably causing progressive damage to the sapwood, decreasing
the tree’s overall productivity. After years of research had established the
damaging effects of paraformaldehyde pellets, these pellets were banned from use in the maple industry.

Maple researchers and sugarmakers continued to search for ways to overcome
the healing process during the sugaring season, however; by 2007 Timothy Perkins at
the Proctor Maple Research Center had begun developing a non-chemical method
that might reduce the growth of bacteria through mechanical means. In 2008 Proctor
had released a prototype for a new kind of tap system which would prevent the
backflow of sap into the tree during periods of positive internal pressure, and by 2009
the taps went into commercial production, by the Leader Evaporator Company. This
system altered the common spout of today, made of hard plastic, by introducing a
spout adapter called a check-valve. This check-valve contains a small ball which,
when vacuum pressure is being applied from the sugarhouse, is pulled out and allows

sap to flow from the tree. When internal pressure from the tree starts pulling the sap back towards the tap hole, the ball pushes up against a barrier and prevents the sap from flowing through. By preventing the entrance of old sap into the tap hole, the check-valve system reduces the amount of bacterial activity in the wound, thus delaying healing. This improvement is increased when these check valves, and the accompanying spouts, are replaced yearly, providing a clean base at the start of each tapping season.

Figure 14: Metal tap and bucket. Fox Run Farm, East Montpelier, VT. Personal photograph by the author. 17 Mar. 2011.
The invention of the check-valve adaptor, combined with the newest technologies in pipelines and vacuum, have improved sap extraction technologies by a huge margin, allowing sugarmakers who use them to increase their annual per-tap yield several-fold over earlier technologies, giving them an edge over the whims of nature. Timothy Perkins is highly confident in the improvement:

If you use really high vacuum and you’re very good about cleaning and you use annually replaceable spout adapters and check valves, you can make .5, .6, even .7 gallons per tap. So we’re making now 4 or 5 times the amount of sap
they made 20 or 30 years ago. Same tree, we haven’t changed the tree at all; we’ve just changed the collection system, and optimized it.\textsuperscript{56}

Many people have expressed concern that by sucking the sap out of the tree with vacuum pumps sugarmakers surely must be killing the tree by depriving it of its lifeblood. In practice, however, even with vacuum taps, sugarmakers can only extract a very small fraction of the overall yearly crop of sap produced by any one tree. The real injuries that kill the tree are related to the extent of wounding due to tapping, not to the amount of sap extracted. Carter Norris, a seasonal sugarmaker in Vermont, has been making syrup ever since he could walk. He has experience tapping with both buckets and tubing, and with and without vacuum lines. The way he sees it, “some people think that you kill ‘em when you tap ‘em. But actually when you tap a tree a bucket you only take 1\% of sap. On tubing with gravity you take 3\%. And then with the vacuum I’m thinking you take around 6\% on one spout.”\textsuperscript{57} In the grand scheme of things, 6\% will not make the difference between life or death for that tree.

The gathering process is not the only side of sugaring that has changed drastically over the last 50 years: sugar concentrating technologies have also gone through several stages of development, leading to sharp changes in both fuel efficiency and syrup quality. From the mid 19\textsuperscript{th} century to the 20\textsuperscript{th} century, the standard boiling procedure involved using a wood-fired, flat-pan evaporator. Around 1900, the modern drop-flue evaporator was developed.\textsuperscript{58} This evaporator featured flues, or deep channels running through the pan, which allowed the heat from the

\textsuperscript{56} Perkins, Timothy. Interview by Eleni Healey. Tape recording. Underhill, VT, August 3\textsuperscript{rd}, 2010.

\textsuperscript{57} Norris, Carter. Interview by Eleni Healey. Tape recording. August 12\textsuperscript{th}, 2010.

flames of the arch to reach greater surface area, thus increasing fuel efficiency. These drop-flue evaporators were connected to multi-sectioned, flat pans, where the sweetened sap would be finished off into syrup on lower heat, thus decreasing the chance of burning the sugar. Starting around 1940, sugarmakers began switching to oil-fired evaporators, though many sugarmakers even today continue to use wood, a resource most of them have on hand in great quantity, considering that sugarhouses are usually located in large dense stands of trees.

Most sugarmakers traditionally let the steam from their evaporators rise out and escape through the roof of the sugarhouse, but as energy became scarcer—and sugarmakers more concerned about the efficiency of their systems—this steam came to be seen as a wasted source of energy. In 1985 Gordon Richardson patented the “piggyback” system, an addition to the traditional evaporator which allows the sugarmaker to reuse the waste heat from the steam to pre-heat the sap in pipes running above the flue pan before they even hit the flames.59 This system has since been imitated by Leader Evaporator Co., which released the “Steamaway,” an almost identical product using the same principle of waste-heat recovery.

Another critically important concentration technology introduced in the late 1970s was reverse osmosis, a process adapted directly from the milk industry where it is used to separate milk solids from water. The technology relies upon a system of membranes, designed to allow molecules of a certain size—in this case, H₂O—to pass through the membrane, while larger molecules, like the glucose, fructose and sucrose in maple sap, are retained. Sugarmakers can use reverse osmosis (R.O.) to extract as

much as 80% of the water from the sap before it ever hits the evaporator—a breakthrough advantage that works wonders in reducing fuel bills. Peter Purinton estimates that today, “95% of what is made is made with reverse osmosis. The word is out. Everybody knows you got to have R.O. in order to produce syrup.”

Reverse osmosis has its foes in the maple industry among sugarmakers who believe that by removing much of the water before boiling, and thus reducing the time the sap spends on the heat, the resulting syrup suffers in flavor because of a reduced level of caramelization. Many sugarmakers who use R.O. will only use it to reduce their sap to, say, 7 or 8% sugar; they are concerned that if they continue beyond that point they will lose out on taste. In a taste test conducted by the Proctor Maple Research Center, however, no one could really tell the difference between the so-called “techno-syrup” made with R.O. and syrup made by boiling raw sap all the way on the evaporator.

If you travel from one sugarhouse to another, you will never find the same setup in any two places. Some sugarmakers opt to use all of the latest technologies, working in vast, streamlined, computerized sugarhouses that process thousands of gallons an hour. Others may use a hybrid of old and new technologies based on what machinery they like or can afford. Still others make the conscious choice to stick strictly to old, traditional methods, less often for reasons of economy than for a powerful and nostalgic attachment to the way things once were. This range of operations reflects a range in attitudes about maple sugaring that vary depending on a

sugarmaker’s lifestyle and philosophy. While some sugarmakers fear the changes that new technologies are bringing to the culture of sugaring, countless others are invigorated by the way these technologies have helped liberate them from drudgery and allowed them to pursue sugaring as a full time career; they have been able to dedicate themselves fully to promoting and preserving this vibrant regional industry.

Peter Purinton speaks with glee when explaining the amazing changes that have come to the industry during his sugaring career. Purinton grew up in a family of dairy farmers, like so many sugarmakers today; he says, “I enjoyed agriculture, but I didn’t enjoy milking cows.” As a child he began working for a neighbor with a large sugarbush in order to get out of morning milking during the sugaring season. As the years went by, what had once been mainly a hobby, Purinton started refashioning into a full time job. Indeed he has had no other occupation in his lifetime than to employ himself in the sugarbush and with his Christmas tree business. Sugaring as a full time job was mostly an improbable fantasy as of the middle of the 20th century, but by the 1980s, when Purinton was a young adult, technology had gained so much ground that, through increased efficiency and sophistication, sugaring had become a legitimate source of income, for the intrepid entrepreneur.

Looking back on the centuries of evolution in sugaring technologies, we find that sugarmakers have become a lot more energy efficient, and significantly more sensitive towards the physical health of their sugarwoods. These growers have greatly increased their focus on tree health by refining tapping techniques to the point where trees which once died within a few years of their first tapping can now live for decades, even when tapped on a yearly basis. They have greatly increased tap-by-tap
productivity with the introduction of vacuum pressure and cleaner tap hole management, thus yielding a larger crop from a smaller number of trees. The invention of tubing networks has greatly reduced the amount of manpower necessary to run an operation. Techniques for concentrating sap have been dramatically transformed from the days of the open-air, log-stone methods of yore through the use of reverse osmosis and super efficient modern evaporators.

Outside of the communities which produce maple syrup largely for their own consumption or the tourist trade, the market for this artisan product is fickle, and demands ever greater efficiencies from producers in order to maintain affordable prices for the average consumer. The future of the sugaring industry may well depend on creative and innovative technologies in order to meet the challenges of an ever-changing consumer environment.
Maple Mania: 
18th and 19th Century Sugaring Culture, and the Sugar Empire that Might Have Been

Large countries within our Union are covered with Sugar maple as heavily as can be conceived, and that this tree yeilds [sic] a sugar equal to the best from the cane, yeilds it in great quantity, with no other labor than what the women and girls can bestow . . . What a blessing to substitute a sugar which requires only the labor of children, for that which it is said renders the slavery of the blacks necessary.

--Thomas Jefferson, 1791

In the revolutionary era, prominent Northeastern opinion leaders held a tea party that threatened to disrupt a major aspect of the British trade empire. The partiers sought to end the consumption of a colonial product that they believed was damaging the economy by stifling the growth of local industry, a product subject to the whims and fortunes of an imperial nation to whom these citizens no longer wished to be indebted. These revolutionaries gathered together and made a bold move: they took their East India tea and dumped into it level spoonfuls of grained maple sugar.

So goes the story of the “scientific tea party,” a gathering not ordinarily included in America’s broader historical narrative, but one with significant and far-reaching consequences for the history of maple sugaring. The event was hosted in the early 1790s by Benjamin Rush, physician and close friend of Jefferson’s, in an attempt to convince the future president that maple sugar was not only equal to cane in quality, but indeed that for the moral and economic good of the new nation it was

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imperative that Americans promote its manufacture to supplant the West India sugar trade. In a remarkably short period of time, maple sugar was transformed in the minds of the many American opinion leaders from a minor local crop produced mainly by subsistence farmers into a highly fashionable—perhaps deliciously profitable—new national industry. During early 1790s this phenomenon, sometimes labeled “the maple sugar bubble,” inflamed the minds and hearts of such influential figures as Henry Drinker, a well regarded Quaker merchant; Benjamin Rush, an influential physician; William Cooper, founder of Cooperstown; and of course, Thomas Jefferson, future president of the United States. The writings of these men, reflected and informed by articles written by supporters of the trade across New England, all made the same point: maple sugar could and should become a permanent replacement for cane sugar in America.

The calls for maple sugar production came from several different directions; collectively they argued for a wide scale takeover of the sugar trade by Northern maple sugarmakers. America was still dependent on European powers for many trade goods, including sugar; maple sugaring could negate the need for imported sugar. Morally-minded Americans were not fond of the idea that their sugar was being produced through slave labor; maple sugar could be produced by free American farmers. Maples covered vast swaths of the known land on the continent, and to all appearances the trees were more than willing to give up a portion of their sap with no maintenance or planting required. Sugar had become such a vital part of the diet of American and European peoples, and the very thought of having an abundant, local, tariff free source of sugar was intoxicating.
Despite all the hype, this era of maple sugar domination never came to fruition. Operating in the shadow of the international cane sugar trade, maple sugar never even came close to the monumental success story predicted by Jefferson and his contemporaries. Communities across the Northeast continued to produce maple sugar, providing a regular sugar supply to their own families and to local markets. The wider audience beyond producing communities never adopted maple sugar as a replacement for cane as a sweetening agent. News articles about the industry slowly shifted from predicting the great possibilities for maple sugar to lamenting the neglect of what was once considered one of the nation’s most promising natural resources. The maple sugar bubble appears, in retrospect, as a fantastical dream cooked up in the heads of land speculators, abolitionists, and over-enthusiastic nationalists.

While a large sugaring industry did not take root in America, those individuals who supported the bubble at the turn of the 19th century did have a significant impact on the cultural narrative surrounding sugaring. Establishing a national market for maple sugar was as much about creating the right story for consumers as it was about promoting production. Maple sugar may have started in the Euro American mindset as a mere replacement for cane sugar, but by the middle of the 19th century it had taken on cultural meanings far surpassing this common origin. Maple sugarmakers may not have succeeded in producing vast quantities of sugar, but they did succeed in producing quite a compelling story. The American Revolution, the slave trade and the cultural values associated with domestic agriculture all were called upon in creating the narrative which eventually would help to propel the sugaring industry into the 20th century.
Long before any Euro American farmers began to tap trees, of course, Indian communities were developing their own narratives of sugaring which influenced the ways that they used their maple sugar. For some Indian communities maple sugar was a substantial portion of the early spring diet, indeed the defining staple for a period in the year when little else was available to forage. Maple sugar was so central to the diets of some communities that the early spring season was often referred to as the sugaring season. For the Iroquois, this time of the year was known as the “maple moon,” *Sheesheegummawis*, or “sap flows fast.” During the maple moon, whole communities would decamp to the sugarwoods, spending weeks harvesting the sugar and participating in celebratory festivities—including a special maple dance—which allowed these communities to pay tribute to the gods who granted them the sweet sap.63

Maple sugar was not merely a source of sweetness and calories, but in fact played a wide variety of roles in the cultures of Indian communities across the Northeast. The sugar would be added to fish and game, and to all kinds of berry and grain concoctions, carried around in a light deerskin pouch and added to almost any foods just as we use salt today. Some Iroquois communities even harvested and consumed the inner bark of the maple tree, which they pounded and dried into a kind of flour. The name for the Adirondacks actually comes from the Iroquois word “Adirondack,” meaning “bark eater” and referring to the consumption of maple bark.64

64 Ibid.
Various parts of the maple tree in addition to the sap were also conceived of as medicinal, and used to treat a long list of different ailments by various groups. Mohegans, Potawotomis and Iroquois used the inner bark as a coughing aid. The Iroquois also used an infusion of the bark to help cure blindness. The leaves were used in a compound to relieve some dermatological problems. In general the Indian mode of using the maple tree was very whole-tree oriented. Indeed, while sugar maples were regarded as somewhat special for their extraordinary sugar producing quality, in general the tree was merely one more resource in a wide vocabulary of wild foods and remedies that resourceful Indian communities relied on throughout the changing seasons.

By the middle of the 17th century, European explorers in the American world had begun to report on the Indian art of extracting the sugar derived from maple trees. Colonial writers commented on the intriguing prospect of a source of sugar, similar to that of the cane, growing wild across New England and Canada. In 1685, the secretary of the Royal Society of London wrote one such description, presenting to the British intelligentsia the fascinating discovery of this “savage” source of sugar that might match cane sugar in taste and purity, when properly refined.

The Savages of Canada, in the time that the sap rises, in the Maple, make an incision in the Tree, by which it runs out; and after they have evaporated 8 pounds of the liquor, there remains one pound as Sweet, and as much Sugar, as that which is got out of the canes; Part of the same Sugar, is sent to be refined at Roven. The Savages have practiced this Art, longer than any now living among them, can remember.  


The writer describes maple sugar to readers back in Europe as a direct analog to cane sugar. The article is brief, and no doubt created no more than a small ripple amongst Royal Society members who were busy attempting to categorize every plant and animal they could lay their hands on in the new world. Its content is critical, however, in that it sketches the narrative within which maple sugar would be embedded in years to come. Maple sugar may be just like cane sugar if properly treated, and its production is simple enough that even “savages” could figure it out.

There was little incentive for those who held power in the British colonial world to invest in the growth of a maple sugar industry at a time when cane sugar production was already fast becoming a robust and integral part of the scheme of colonial profiteering. The year that the Royal Society article on maple sugar was printed was a year of great interest to the British cane sugar trade as well. 1685 marked a high point in the rise of the British trade. Production was so great that year that the markets reported record low prices:

[The British] came late into the field—Barbados in the 1640s, Jamaica, as a substantial grower, after 1660—and in the early 1660s they were still contending with the Portuguese, even for the English market. But already their competition had caused a considerable decline in prices, and prices continued to fall, on the whole, until about 1685, by which time the English product had driven Brazilian sugar from the North European as well as from the English market. West Indies sugar imports to London, negligible before the Civil War, rose from 148,000 wt. in 1663/69 to 371,000 cwt. In 1699/71—and a third of this latter total was re-exported. The plantation price of sugar reached a low point in 1685 of 12s. 6d. per cwt.; the retail price was halved between 1630 and 1680.67

Such astounding growth in the cane sugar industry did not come without consequences. The British colonial empire depended heavily on the cooperation of the New England colonies to materially support the endeavors of the sugar-plantation

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economy. To provision the slaves and to keep trade afloat across the Atlantic, the West Indies were highly dependent on the timber and grain produced by the New England colonies. It was imperative that England keep control of her continental American holdings, and manage those lands to best support the real moneymakers down in the South Atlantic. Eric Williams demonstrates the strength and intricacy of this economic coupling between New England and the West Indies in his seminal work, *Capitalism and Slavery*:

Thus did the North American colonies come to have a recognized place in imperial economy, as purveyors of the supplies needed by the sugar planters and their slaves, and the New Englanders came to be regarded as the Dutchmen of America. The mixed husbandry of the Northern and Middle colonies supplemented the specialized agriculture of the West Indies, as in the nineteenth century it fed the cotton and rice regions of the American South. As early as 1650s the New England colonies were feeding their “elder sisters,” Virginia and Barbados. Winthrop assigned the credit to Providence, but mercantilism has much to do with the arrangement. “His ma collonyes in these parts,” wrote Voerneor Willoughby of Barbadoes in 1667, “cannot in tyme of peace prosper, nor in tyme of war subsist, without a correspondence with the people of Newe England.” Not only food, but horses to supply the motive power of the tread-mills used in sugar manufacture, and lumber for buildings, were the articles most in demand in the islands. “There is no island the British possess in the West Indies,” wrote Samuel Vetch in 1708, “that is capable of subsisting without the assistance of the Continent, for to them we transport their bread, drink and all the necessaryes of humane life, their cattle and horses for cultivating their plantations, lumber and staves of all sorts to make casks for their rumm, sugar and molasses, without which they could have none, ships to transport their goods to the European markets, nay, in short, the very houses they inhabitt are carryed over in frames, together with shingles that over them, in so much that their being, much more their well being, depends almost entirely upon the Continent.” The West Indian planters entertained no illusions about the importance of mainland provisions and horses. The Barbadians, wrote a Boston factor in 1674, are “all sensable of the great prejudis which will accrue to them yf they loose the benefit of those two commodityes, which are vendable in noe part of ye world but New England and Virginia.”

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It comes as no surprise that the British shied away from pursuing a trade in maple sugar when there was already such an abundance of sugar being produced in the West Indies. There was little incentive to make any attempt to promote a New England sugaring economy when such a trade would only diminish the economic vitality of the West Indian plantations by offering competition, and by distracting the labor force of New England from the logging and farming which were so essential to supporting the islands.

Maple sugaring was practiced on a diffuse and limited scale in America during the late 17th and 18th centuries, pioneered by settlers in remote areas far from access to regular cane sugar supplies and by farming families who had little extra cash for buying sugar. Maple sugaring rose little above this subsistence-level production, if at all, in the 18th century; there are few, if any, records of any substantial sale of maple sugar before the 1780s. Prior to the separation of the United States from the British empire, of course, such a practice would have been seen to run counter to British maritime trade interests. If settlers began to make their own sugar, instead of purchasing it from the West Indies in exchange for food and timber products, British merchants would have experienced some serious difficulties in carrying on their very profitable trade in sugar around the Atlantic world.

In the latter half of the 18th century—around the time when North American settlers started chafing at their role as British colonial subjects and were beginning to re-imagine their colonial settlements as a new nation—interest in maple sugaring began to mount. While it is nearly impossible to know what the general populace felt about maple sugar, or to estimate how many farmers might have practiced the art of
sugaring in the 18th century, it is possible to glean a perspective on the public
narrative surrounding maple sugaring by surveying the newspapers printed in New
England and the Middle Colonies. This perspective does not provide access to
popular discourse on sugaring, but rather a selective narrative produced by learned
and influential contributors to a printed media that only a portion of the society
would, or could, read. Nonetheless the opinions printed in these news sources
provide a fascinating window into the evolution of maple sugar in the eyes of the
American public.

There are some scattered references to sugaring prior to the 1760s, but very
little was printed beyond stating, quite simply, that it was possible to create sugar
from the maple tree, and that Indians held the key to such production. It appears as if
the influence of the British sugar trade forestalled discussion of any significant
manufacture of maple sugar until British influence began to slacken. Sugaring
remained a hinterlands pursuit, engaged in mainly by families and communities living
outside the influence of the print media.

In the prelude to revolution, the British Parliament raised taxes on many
goods imported into America, including, most famously, East India tea. Tea taxes
alone did not enflame the minds of colonists to revolution, however. Just as much as
they relied on tea in their daily diet, colonists also depended on the sugar with which
to sweeten it. The Sugar Act of 1764, which raised import taxes on cane sugar from
sources other than the British Islands, struck a heavy blow to the colonial trade
economy. Parliament already had on record an act taxing the importation of foreign
sugars, but merchants had always found ways to get around it. In 1764 Parliament
passed the new sugar act in order to enforce strict regulation against foreign importation in order to raise more revenue from the colonies, which were already slipping from its control.

Shortly following the passage of the Sugar Act in 1764 an article was printed in the New York Gazette that presented the possibility that sugar could be manufactured from the sap of maple trees in New England and marketed at far cheaper prices than the cane sugar being imported from the West Indies. The author of the piece, titled “Indian Method to make as good Sugar as the Islands Afford,” writes with much enthusiasm about the economic opportunity that maple sugaring would present to settlers in the New England colonies, if they were to develop a large sugaring operation on the model of the cane plantations:

If some Man would build him a sugar-House, and provide a set of Boilers, and other Utensils, as they have in the West-Indies, I am persuaded he would find his Account in it, beyond what those in the West Indies can do. For the Gentlemen, who hath a Plantation in the West Indies, is at great expence (sic) in preparing his ground, planting his cane, and cultivating it for more than a year, before it is fit for use, in cutting trimming, and topping it for mills to grind it, and not till all this is done is the Sap of the cane ready for boiling. All this charge might be subtracted from the Gentleman’s account, who uses Maple trees, instead of cane, except the expence of tapping the trees, and gathering the sap, which is as nothing to compare with the other. . . I have been informed that two men, under the disadvantage of boiling it in two kettles, and in the open air, have in a good season, made a barrel in a week. What then would a number of Hands do with a set of West-India Boilers, coolers, and other advantages of dispatch, which they are furnished with? Trees fit for this business, are very plenty in the uncultivated Wilderness between Connecticut and Hudson’s River, also in the Northern Borders of this Province: And could the one half of them be used I suppose they would more than furnish all the British Colonies upon the Continent with Sugar.69

The author of this article sets these future maple sugarmakers in direct competition with cane sugar manufacturers, suggesting that import substitution might be possible

69 "Indian Method to Make as Good Sugar as the Islands Afford," The New-York Gazette, January 9 1764.
in the Continental colonies. He describes maple sugar in terms of its potential profitability in the pre-existing sugar market, imagining it rising swiftly to prominence by mirroring the tools, techniques, and consumer patterns already in use. The author imagines a future in which the American mainland colonies are in fact independent of England when it comes to one of the most important colonial commodities. Such a sentiment has a resonance that verges on treason—why should New England colonists seek to replace that which the mother country already so readily supplied?

A decade after the Sugar Act was passed, revolution against British control and taxation began in earnest, most famously with the Boston Tea Party of 1773, and other anti-taxation protests that rippled across the colonies. One such protest was voiced by a country farmer in Connecticut who wrote a letter to the Connecticut Gazette raging against British imperial economic policies and urging fellow colonists to raise hell for Parliament. His strategy: stop consuming British sugar, and start producing it locally from maple trees. His clever strategy proposed to negate the Sugar Act simply by eliminating the market for British sugar. The author suggests that farmers begin to produce maple sugar in earnest, in quantities sufficient to replace the local demand for cane sugar. The Connecticut Farmer recognized a potential for the New England colonists to take charge of a significant aspect of the colonial economy. Plugging maple sugar as one of the best weapons colonists could use against the economic oppression they were experiencing, he writes:

I think the farmers can do more towards regaining and supporting the liberties of this country than any other set of men whatever, as they are the present lords and proprietors of lands, and produce thereof, we must therefore insist upon, and resolutely urge a non-importation and non-exportation agreement to
England and the West-Indies: But methinks I hear some mercenary merchants say, that won’t do for either of us, we must have our navigation go on, we must export lumber, horses, &c, else what will you do with your provision? And we must import salt, sugar molasses, &c… But let me tell you, without a total stop is put to the West-India trade, nothing can be done; For I am well informed, and I believe may venture to affirm it is true, that there is no less than seventy four members of parliament, that are West-India planters or proprietors; and I am also credibly informed that they were the means of fomenting these difficulties by first getting a duty laid on all sugars, molasses, coffee, &c. not imported from the English West India islands; it will therefore be necessary to shew them of how much importance we are, by distressing them for want of our trade . . . Our maple trees will produce very good sugar and molasses.70

As it came to pass, maple sugaring never played a significant role in the fight for independence, as revolution occurred by more swiftly than any significant augmentation in maple sugar production ever could. The Connecticut Farmer’s article does however suggest the heightening awareness of the possibility of a significant maple sugar economy in the future of a free American nation.

Over the course of the 18th century, sugar consumption in the colonial world surged as plantations expanded and prices fell, granting an ever larger consumer population access to a product that was rapidly evolving from a luxury into a daily habit. While there is little documentation of the size and extent of the sugar market in pre-revolutionary America, we can assume that changes in consumer patterns roughly matched those in Britain; in Britain, per-capita sugar consumption nearly tripled from the beginning to the end of the 18th century.71 According to one journalist’s calculations, by 1789 the American population consumed around 42,084,140 pounds of cane sugar per year. That translates into roughly 13 pounds of sugar annually per

Compared to our modern day consumption of sugars and sweeteners (as high as 103 pounds per capita annually in the United States) this is not a huge amount, but compared to the beginning of the 18th century, 13 pounds of sugar was huge. With such a large expansion in consumption of sugar, and such vast numbers of sugar maples all around them, it seems almost ludicrous that New Englanders did not take advantage of the maple. The British imperial trade system, however, effectively foreclosed that development.

Despite high consumption rates of West Indian sugar in large parts of the seaboard regions, there were many areas in the further reaches of the new nation where there was little to no access to cane sugar. It was in these remote communities that maple sugaring developed. Sugaring could be practiced by rural families during a time of the year when there were few other chores. Maple sugar would be a welcome source of flavor and calories for families eking out an existence in the early years of agricultural development.

Many land speculators touted the availability of maple trees as one of the prime attractions of the open lands to the West. Maple sugar was listed as a precious resource alongside valuable ores, indigo, and silk (mulberry) trees. An advertisement for the “Illinois Country” boasts “A large quantity of Sugar is … annually made from the juice of the maple tree.” An advertisement for the “Kentucke Country” claims “their sugar is obtained from the maple tree, which grows in every part of the

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country.” Potential settlers might find themselves far from civilization, but these advertisements assure them that they would not be far from sources of familiar goods that could make their lives quite civilized.

Advertisements for the settlement of the west were highly romanticized, some of them rivaling Humboldt in their praise for the new country. One writer recounts his visit to the “Ohio country,” a land which he foresees becoming a lush, productive and self-sustaining land of endless opportunity. Maple trees play prominently into his vision of the future, touted as a staple for locals as well as a source of commerce:

I never before felt myself so much disposed for meditation—my imagination involuntarily leaped into futurity—the absence of which was not afflicting, because it appeared to me nigh—I saw those beautiful shores ornamented with decent houses, covered with harvests and well cultivated fields—on the hills exposed to the north, I saw orchards regularly laid out in squares:—on the others vine-yard plots, plantations of mulberry trees, acacias, &c.—I saw there also in the inferior lands, the cotton tree, and the sugar maple, the sap of which had become an object of commerce—I agree, however, that all those banks did not appear to me equally proper for culture—but as they will probably remain covered by their native forests, it must add to the beauty—to the variety of this future spectacle.—What an immense chain of plantations! What a long succession of activity, industry, culture and commerce is offered to the Americans!

The writer speaks with a deep conviction that the American people—if they move to settle the Ohio—are destined to live in a place where the natural products offered by the land generate a society “of activity, industry, culture and commerce.” Maple sugar would surely be one of the primary commodities such a society would produce.

It is important to note the way that the lands upon which maple tree was found were characterized, since the nature of those lands has a bearing on the ultimate

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76 “The Following Extracts from the Letters of a Gentleman, Who Visited the Western Country, Must, We Think, Be Pleasing to Our Readers,” *Massachusetts Centinel*, October 3 1787.
deflation of the maple sugar bubble. The writer of the “Ohio Country” writes specifically that maples might be farmed “in the inferiour lands,” lands upon which no other crops might be farmed. The author does not imply that sugar maples were only capable of growing on those sub-par soils, but rather that it is on those lowly lands that they should be allowed to remain standing. This is a key reason that maple sugaring never took off as a large scale, nationwide industry. Wherever the soil underneath the maples was good enough to turn into arable farmland, trees were cut down and sold as lumber. The only trees allowed to live—and thus available for sugaring—were those trees that grew on soils that were undesirable for farming.

One of the primary motivating factors driving the initial expansion of interest in maple sugar was the crisis that afflicted cane sugar prices in the late 1780s. Between 1784 and 1791 the price of cane sugar sold by English grocers skyrocketed from a range of 30-70 shillings per hundred weight to a range of 60-95 shillings per hundred weight. In the lower end of the range, that is a 100% increase in price.\footnote{Mintz, \textit{Sweetness and Power: The Place of Sugar in Modern History}, 104.} This price inflation was surely caused hardships among people whose diets had become heavily dependent upon cane sugar. While these figures are specific to Britain, it is safe to assume that there was a similar jump in the cost of sugar being sold in America considering it largely came from the same source, the British islands.

Thomas Jefferson was well aware of these developments in the cane sugar market, and he was more than willing to support an effort to promote maple sugaring in the stead of cane importation. One of the great attractions in Jefferson’s mind was that maple sugar was a product of solid American farm families, those whom he saw as the very foundation of the new nation. Jefferson believed that “cultivators of the
earth are the most valuable citizens. They are the most vigorous, the most independant, the most virtuous—and they are tied to their country and wedded to liberty and interests by the most lasting bands.”

He was enthralled by the possibility of filling the vast demand for sugar in America with the fruit of the yeoman farmer’s labor. Maple sugar figured as one of the many bounties of the land of which these farmers could take advantage, generating the greatest benefit possible from the rich American soil.

By the late 1780s, as maple sugar was becoming well established as a key element in the image of an idyllic agricultural society, the industry also began to be situated in a larger, more politically powerful narrative: maple sugar as an antidote to the slave trade. As growing opposition to the use of slave labor in the West Indian trade began to surface in America in the 1780s, maple sugaring began to be framed as a potential solution, based on the same principle of economic pressure that was utilized by the Connecticut Farmer as a strategy for opposing the British Empire’s taxation policies. Maple sugar was quickly being transformed into a symbol of resistance, a convenient way for morally-minded Americans to protest the slave trade without giving up sugar altogether. An article printed in the Independent Gazetteer reveals the way that the slavery narrative was used to promote the industry:

Now, the best means of abolishing both the slavery of the Africans, and the transportation of them to the West-India Islands, is to introduce substitutes for the articles which are raised by them places. The American sugar-tree, or sugar maple, produces syrup and sugar in very considerable quantities: and with a little attention early in the spring of the year, when the farmers are idle, quantities might be procured, to supply the families of many, who from conscientious objections, or sound policy, object to the slave trade. A very

creditable person has informed us, that ten hundred weight was made by one farmer, in Northampton county, in 3 weeks last spring.—Now as this is a supply for 5 families for a whole year, and as there is abundance of sugar tree on the waters of the Delaware and Susquehanna, and there is wood in abundance also for boiling the syrup down to sugar, it is clear that large quantities might be made for sale. It is hoped that those who have the sugar-maple on their lands will attend to this, as it really may become a valuable economical manufacture, though very little has been thought of it heretofore. 79

A contemporary article, printed in the *Federal Gazette*, makes an auspicious prediction for the possibility of production in Pennsylvania, also clearly emphasizing the slavery issue as a primary motivator:

A gentleman, who has lately visited the country between the Delaware and the Susquehanna, has calculated that there are SUGAR MAPLE TREES enough in the State of Pennsylvania to make as much sugar as could be consumed in the United States. This Maple Sugar has been examined in Philadelphia, and yields *loaves* equal in quality to that which is made from the juice of the West India cane. To freemen, its sweetness ought to be enhanced by the reflection, that it is not stained with the sweat and blood of Negro Slaves. 80

The slavery narrative was so powerful that it actually helped to carry maple sugar overseas, generating market demand among French abolitionists. In 1789 a member of Les Amis des Noirs, a prominent French anti-slavery society, addressed the congregated members about the production of maple sugar by free men in the Northeastern United States. Monsieur de Lanthenas suggests that the members of the society import maple sugar from America, and perhaps even try to cultivate the trees in France as well, in order that “sugar may be obtained which has not been watered with streams of the SWEAT, or stained with the BLOOD of the human species.” 81

The support for maple sugaring grew as tensions in the West Indies worsened, both from a moral and an economic perspective. When news of the Haitian

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Revolution broke in American media in 1792, *Dunlap's American Daily Advertiser* was quick to connect the fall of arguably the most important sugar colony in the West Indies with a perfect opportunity for American maple sugarmakers. The article exhorts the farmer to act swiftly:

> The present is the season. The ensuing six weeks *ought* to be made the best use of. Let every family make a hogshead, a barrel, a keg. . . . here seems to be little doubt that the price of sugars will be more than two sixteenths, probably near three sixteenths of a dollar per pound, according to the quantity and quality through the ensuing year. . . . There can be no danger to the American land-holder and cultivator in making extraordinary efforts on this occasion. Should the insurrection in Hispaniola prove to be quelled at this time, it would be a work of years to bring the exports of sugar, molasses, cotton and indigo, to the quantity shipped in the last year. 

While these articles and many others cited numerous political and economic reasons for pursuing sugaring, other writers attempted to tabulate the feasibility of large-scale sugaring from a purely physical standpoint. One such article, citing the authority of William Cooper, makes an effort to verify numerically the potential of maple trees to fill the market need for sugar. Cooper addresses the economic side of the maple sugar debate in a manner that is far more concrete than ever before published, thus lending an air of scientific authority to the emerging industry:

> Mr. William Cooper . . . gives information, that there is usually made from a tree five pounds of sugar, and that there are 50 trees on an acre, at a medium. But suppose only four pounds a tree and 20 trees to an acre, then 105210 acres will yield 8,446,828 pounds weight. And supposing, as above stated, the whole demand of the union 42,084,140 lbs. or five times the importation into Philadelphia, then 526,000 acres will supply the United States. It need not be observed, that there are three times 526,000 acres of sugar-maple lands in each of the states of New-York and Pennsylvania, which are particularly mentioned, from their being known to the estimator.

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83 "American Maple Sugar and Molasses."
According to Cooper’s calculations, there is no question that maple sugar could become a major commodity replacing cane sugar in the United States. His purely speculative figures, based on experience with his own maple sugar trees, can hardly constitute an accurate reflection of the potential for a nation to conjure up the resources, technologies and collective will to make the leap in land use and consumer practices to promote large-scale maple sugaring. To the contemporary reader, farmer and consumer, however, surely such figures sent a powerful message of promise for the future of sugaring.

William Cooper’s investment in the future of sugaring in the Northeast is evident from the ways in which his name is quoted in the public media in relation to the burgeoning sugaring trend in 1790. In an article for the *Burlington Advertiser* one journalist notes the prominent place that Cooperstown might play in the now potently imagined future of maple sugaring in America:

A village begins to appear at the foot of Otsego, called Cooper’s-Town, after William Cooper, the founder, who has just established a store there, and who is about to export from thence to Philadelphia the first cargo of maple sugar, which promises to be hereafter a capital branch of business, and to retain in the union most or all of the cash that otherwise would purchase West-India sugar and molasses, possibly too, if Federal Sugar becomes fashionable and general, it may give a mortal stab to the detestable practice of human slavery.84

Thus under the name of Cooper, maple sugaring became not only rationalized, but glorified with a liberal poetic license. In this same year, an anonymous writer harking from Cooper’s-Town presents a lengthy column on “Thoughts on the Importance of the Maple Sugar Tree, to the United States,” in which the author describes in some detail the methods for producing high quality sugar. In addition to

useful details for the prospective sugarmaker, the writer makes a point of engaging
with the public discourse on sugaring. He emphasizes the popularity of maple sugar,
and adds his own glowing recommendation for the promotion of the industry in the
future:

The attention of the public has been so much drawn towards the infant, but
important article of maple sugar, and so many able pens have been employed
in promoting and encouraging its manufacture within these few months, that it
seems almost unnecessary and indeed impossible to say any thing more upon
the subject than has already been said:--but as it is a matter of such
consequence to the whole United States, it is better that thousands of
superfluous volumes should be written than that the undertaking should fall to
the ground, till every sentence has been repeated that can possibly contribute
to its support: and the author having been an eye witness to the wanton and
inconsiderate destruction of those *diamonds* of America—through the
ignorance and inattention of the northern farmers, he is tempted to intrude
upon the public eye, and endeavor to contribute his mite to the advancement
of the interest of America.\(^{85}\)

By comparing maple trees to diamonds, the writer fashions them as a precious and
beautiful commodity, one which, if ignored, would be a tragic waste of a natural
resource. Elevated praise of the sort written by the Cooperstown author is often
heaped upon the maple tree in this era. An article from Schoharie, New York, paints
a highly emotive picture of the difference between the slave laborers forced into
producing cane sugar, and the free American laborers who will pitch in to help make
maple sugar:

This work is in a great measure left to the girls, and at that season of the year
whole colonies of them may be met with in the woods, in small temporary
sheds, pursuing this laudable occupation. How different the scene when
contrasted with the prospect of a cane-field in the West-Indies; there the toil
of planting and nurturing the cane is immense; the famished mother on the
parched mountain with her child tied to her back, digs the furrow, heavy and
depressed, while the unmerciful driver hastens her and her companions forward
with the unfeeling cart-whip—Here on the contrary all is freedom—buxom

\(^{85}\) "Thoughts on the Importance of the Maple Sugar Tree", *The New York Packet*, August 22
1790.
health and voluntary labor pursues her task without repining, animated by the consideration that their toil is not to gratify the pride of an ambitious despot, or some tyrant of the neighbouring fields. For my own part I suffer no other sugar to be used in my family, and the idea of freedom seems connected with every dish of tea I take that is sweetened by it.  

As the buildup of interest and publicity surrounding maple sugar increases, so does the height of the prose used to describe it. The juxtaposition of “buxom health and voluntary labor” with the “famished mother on the parched mountain” is an unabashed tug on the heartstrings of readers, designed to appeal not to one’s rational motivations, but rather directly to one’s emotional response.

By the end of 1790 the enthusiasm for maple sugaring had reached the highest echelons of society. In his highly popular work, “Remarks on the Manufacturing of Maple Sugar,” Benjamin Rush—author of the “Account of the Sugar Maple” referenced in relation to Jefferson and the sugar maple plantation, which covers many of the same ideas—makes the most compelling and detailed argument in favor of sugaring that had been published to date, broadening the audience for the sugaring discussion in order to promote greater production.

Indeed this work seems to have had a twofold audience: first and foremost, it was directed to the American elite, whose money and political support could provide the necessary foundation for an extensive maple sugar industry. Secondly, the work was directed to farmers, in order to convince those laborers that they wanted to sugar—this was not the West Indies, after all, and thus the sugaring economy would be dependent upon the farming practices of individual families. For the benefit of both groups within this audience Rush began his piece by expressing the moral and social imperative of the transition into a maple sugaring economy:

He who enables another to obtain any necessary of life, either cheaper or more independently than heretofore, adds a new source of happiness to man; and becomes more or less useful, in proportion to the number of those who participate in the benefits of his discovery. The transits [sic] however, made from one stage of improvement to another, are not sudden, but gradual; which probably arises from that strong and almost universal disinclination, in the mind, at departing from the beaten path, or from long established customs. Hence men, frequently, at first, treat with neglect or contempt, that which, afterwards on better information, and a thorough knowledge of facts, they believe, and without reserve, adopt in their subsequent practice. Where [sic] we to introduce, and embrace, as a maxim,—“That every new proposition, merely on account of its novelty, must be rejected,”—our knowledge would no longer be progressive, and every kind of improvement must cease.\textsuperscript{87}

Creating an appealing narrative was a crucial step towards popularizing maple sugar in the Northeastern states; without a market, there would be no reason to produce the sugar in the first place.

Several articles published over the preceding decades had already made some attempts at providing instructions on sugaring, but none contained so thorough and detailed an account as Benjamin Rush’s “Remarks.” Rush dives into the nitty gritty of just how it was that a man with a few dollars, a lot of trees, and the will to work hard in the wet, snowy forest, might go about making an excellent and lucrative sugar crop. To this end Rush dedicates 16 pages to a summary of painstaking research into the latest technologies in equipment and boiling, laid out in a format accessible to the amateur sugarmaker, as a complete guide to founding a new operation. Rush designs his treatise for anyone to use, undoubtedly with the hope that a sugaring trend would soon catch hold in the nation, despite the “disinclination . . . at departing from the beaten path” which might oppose its progress among the populace.

Benjamin Rush allowed a select few men to read his article prior to its publication, a list which included both Jefferson and Henry Drinker, a prominent

\textsuperscript{87} Rush, "Remarks on the Manufacture of Maple Sugar," 3.
businessman whose Quaker affiliation placed him squarely among those who would oppose the slave trade and favor alternative sources of sugar. Both Jefferson and Drinker were also attendees at Rush’s maple sugar tea party described at the beginning of this chapter. These men, along with William Cooper, formed an elite and powerful core of advocates whose actions and writings were defining the way the public might consume, and conceive of, maple sugar.

Not everyone was as enthralled by the idea of maple sugar replacing cane sugar as Drinker and his compatriots; the most vocal opponents printing their views in the public forum were none other than West India planters, whose economic futures maple sugaring appeared to threaten. One gentleman planter, writing from Jamaica, sees the maple sugar experiment as just another fool’s errand of an economic project:

> It is an old and just observation that if a man has too many irons in the fire, some one of them will burn. All nations have had their foibles; so the English some years ago were to fish up mines of gold from the bottom of the ocean in the herring fishery. This is now more profitably left to Dutchmen, while they attend to commerce only, and find their account therein. In like manner, if you are a wise nation you will leave sugar-making to our negroes, and employ yourselves in your wonted articles.  

The writer, while somewhat snarky in tone, does make a strong point here: attempting to farm and bring to market a product already supplied to the population by a mammoth industry driven by cheap labor and backed by rich, powerful men perhaps does not sound like the best plan in retrospect. Setting aside the moral and political factors that so engrossed maple supporters, if maple sugarmakers could not quickly and cheaply produce enough sugar to completely satisfy the American demand for

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sugar, it was unlikely that they could ever become a serious threat to the West Indian establishment.

The writer from Jamaica may not have been prescient so much as he was protective of his interests, and in the short-term his predictions actually faltered as market demand for maple sugar skyrocketed in the face of cane plantation failures. By 1792, political and environmental crises wracked the West Indian plantations. Bad weather and weak growing seasons produced sub-par crops. August 22, 1791, marked the beginning of the protracted and bloody slave revolution in Saint Domingue, formerly one of the most productive sugar colonies in the world (it had produced 180 million pounds of sugar in 1789 alone).89

Indeed the market for maple sugar appeared to be taking off in a serious way in the early years of the 1790s, riding a rising wave of uncertainty in the cane-sugar market. Americans were clamoring for maple sugar in the marketplace at a rate which exceeded the ability of already established maple sugaring operations to supply it. Several papers mention the clamoring for subscriptions to open up in Philadelphia, and when they did, there simply wasn’t enough to satisfy demand. Even Jefferson was unable to buy as much as he wished, and he marvels at the phenomenon of maple sugar’s sudden popularity. “Such is the avidity for maple sugar,” he exclaims, “that it is engaged in the country before it comes to market. I have not been able this year to buy a pound for myself.”

Demand spiked, but what of the supply: how did the investments of Cooper, Drinker, and other like-minded businessmen fare in pursuit of maple fortunes? There is little numerical data to gauge precisely the size or extent of the maple sugar

89 "Indigo, Cotton and Maple Sugar."
industry in the United States prior to 1850. However, we can glean some indirect evidence from public news sources which discuss the state of the sugaring industry during the decades following the 1790s bubble. Very little new material was published concerning maple sugaring during the first two decades of the 19th century, although some of the more notable and useful articles of the earlier period were reprinted from time to time in newspapers across New England. Although the revolution in Saint Domingue succeeded, slowing production on that island practically to a halt, no other slave revolutions were to follow; the other West Indian colonies more than made up for the loss of Saint Domingue’s sugar by boosting production to match market demand.

The grandiose predictions of the 1790s for the future of the maple sugaring industry did not fail for any single reason. Instead, the sugaring industry just never managed to grow at the pace necessary to supply the demand. While rural maple sugar production did increase significantly, the intense political drive propelling the vision of industrial-scale sugaring operations fizzled out with little fanfare. Maple production in the United States actually peaked in 1860 at around 40 million pounds of sugar and 1.6 million gallons of syrup. Indeed, this is almost as much as William Cooper estimated in 1789 as the amount necessary to supply the American demand for sweetening—42,084,140 lbs. By 1860, however, both the American population and the overall demand for sugar had grown enormously. Forty million pounds was chump change compared to the overall demand for sugar in the United States, which was now being met by both cane and beet sugars.

90 "American Maple Sugar and Molasses."
After the peak in the 1790s, the public interest in sugaring fell significantly, reflected in a deep decline in the number of articles written on the subject in the public media. Almost nothing was published in American newspapers from 1793 to 1820 concerning sugaring. In 1820 and beyond, articles on maple sugaring resurface in public media, but those articles mainly lament the neglect with which the potential sugar trade has been treated by American farmers and consumers.91 A farmer from the Susquehanna country wrote a letter to the editor of the American Farmer in 1823 in which he airs his regrets:

When care is taken in the making of it, I think the maple sugar, much superior to that which is made from the cane. It would be a profitable article of domestic produce, were it properly attended to. But I regret to see my neighbours in clearing their land, pay no respect to the superb tree which produces it; but destroy it with the rest of the timber.92

Seven years later, in 1829, the New England Farmer published an article expressing the same lament:

It is in our opinion treated with too much neglect. Great improvements may be made both in regard to quantity and quality. Immense sums of money are annually carried out of the state for the purchase of sugar, which is admitted by most people to be quite inferior to some of our maple sugar. A great proportion of this money might be saved in this state, by a suitable improvement of the means in our power to prevent it.93

When Cooper predicted the success of maple sugaring, he wrote under the assumption that the many thousands of acres of land across Pennsylvania and New York that were covered in maples would continue to host these trees and provide a seemingly endless source of sap for entrepreneurial sugarmakers. Such might have been the case in 1789, but by the mid 1800s, after many decades of heavy agricultural

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91 Data compiled from the America’s Historical Newspapers database.
93 "Maple Sugar (Mar 13 1829)," The New England Farmer and Horticultural Register 7, no. 34 (1829).
development across New England and the Mid-Atlantic, over 80% of the forests across the Northeast had either been logged or cleared for tilling and pasture. Even had there been enough farmers willing to produce it and enough market demand to consume what they produced, the supply of trees had diminished significantly to the point where the infrastructure necessary to transport it from those limited and remote areas in which the trees remained untouched would largely have outweighed the potential profits.

To read the will of Henry Drinker is to gain a tangible perspective on the disappointment of the maple sugaring industry to those whose interests were closely tied to its fate. Early on in the maple sugaring craze Drinker founded the “Society for promoting the manufacture of sugar from the sugar maple-tree and furthering the interest of agriculture in the state of Pennsylvania.” This organization was not only designed to further the interest of agriculture in the state of Pennsylvania generally, but also to promote Drinker’s own interest in making profitable the land he invested in sugaring. According to his will, Drinker had purchased eight tracts of land in the name of the Society, which lands were to be used to develop maple sugar. Upon his death, those lands were discharged in order to pay his debts.

The maple sugaring industry has never attained anything close to the designs of early advocates like Jefferson and Drinker. An industry that once seemed to present a perfect opportunity to promote national self sufficiency and freedom from entanglement with the international slave trade slowly lost its cachet, adversely affected by dropping cane sugar prices and increased domestic production of cane sugar (utilizing slave labor, of course). Maple sugar may never have achieved
monopoly status on the domestic sugar market, but the industry nonetheless experienced significant growth in the quantity of sales, and a new reputation in the public eye by the mid 1800s. A 40 million pound share is nothing to scoff at.

While maple sugar never became a serious threat to the cane monopoly, over the generations it has established its own niche within local and international food markets as an artisan food representative of the ideals we project onto American farm life, marketed as a sweetener borne of hard labor, dedication, and a love for the land from which that bounty is drawn. The development of maple sap into the commodity it is today is a tangible demonstration of the inexorable interplay between human cultures, the technologies they create, and the changing environments in which they live. Many of the important notions upon which sugarmakers today rely to sell their products are the very same ideas that 18th century maple enthusiasts implemented to promote the culture of the sugar maple. These maple supporters generated a strong and vital foundation for the narratives that support the sugaring industry today: it is a product representing freedom, purity, and the vitality of the American farmer.
Making Maple Modern:
20th Century Sugaring Culture and Marketing

*I like to make sugar, but I don’t like to make sugar well enough unless it pays.*
--Helen and Scott Nearing, 195094

As the novelty of the maple sugar bubble wore off in the early 19th century, maple sugarmakers began to redefine the industry based on a new approach; rather than trying to corner the sugar market by means of direct competition with increasingly cheaper cane and beet sugar, sugarmakers looked to improve the their market prospects by expanding upon the narratives defining maple sugar/syrup as a distinctive food product to be consumed not merely for its excellent taste, but also for its inherent cultural value. Such a transformation required increasing professionalization and networking among sugarmakers in order to standardize both the quality of the sugar, and the narratives to be sold to the public.

In this chapter I explore the 19th and 20th century developments that contributed to the creation of the modern-day sugaring narrative. Throughout the last 150 years, the sugaring industry of the Northeast has carved out a unique niche as an icon of traditional American values. Today, maple sugaring is conceived of by many average Americans as a means of connecting with the land and a heritage with which they have long since lost touch. Maple syrup is depicted as a pure, organic and sustainable product drawn from the forests by sugarmakers dedicated to preserving a simpler, backwoods way of life.

As the 19th century drew to a close, the composition of the communities of the Northeastern states had dramatically changed from a series of small, rural farming communities, into an ever growing network of urban populations whose ties to the land were rapidly diminishing. The elite of these new city centers consisted largely of the descendants of old Yankee farmers who had successfully made the move from farming to business and trade. The legacies of these families were well established, and they retained a sense of their old New England agricultural heritage that distinguished them from the growing immigrant populations filling the cities from all parts of Europe.

As industrial capitalism drove up the construction of factories and workhouses, floods of immigrants came to live in the cities of the Northeast, dramatically altering the tenor of city life. Working class immigrant neighborhoods sprang up, increasing levels of noise, pollution and crowding. These poor communities had little access to green space, destroying any sense of connection to the land. The crowded, dirty city life was not without its consequences; living in close quarters allowed disease to rage much more quickly through city populations, and water and air pollution exacerbated health issues among communities whose jobs frequently involved working under sub-par environmental conditions as well. The stresses of city life affected not just one’s bodily health, but one’s psychological fitness as well. While little attention was paid to the impact on working class immigrants, the perception of the devastating effects of urbanization on the bourgeoisie became a matter of considerable concern. In the late 1860s, George Miller Beard, an American doctor, coined the term “neurasthenia” to describe a
nervous condition associated with a high-stress urban lifestyle. Beard’s remedy of choice; electro-shock therapy.\textsuperscript{95}

Of course not all complaints attributed to the city blues were severe enough for such drastic methods of treatment. Indeed for those with money and leisure enough to simply take a break from their city life, there was growing interest in the late 19\textsuperscript{th} century in going on farm vacations. Life on the New England farm was increasingly romanticized by the urban elite as cities grew ever larger and more crowded. Many urban dwellers, especially those descendants of American farmers who might feel threatened by the influx of the poor, foreign immigrants who were so unfamiliar to their past experience, saw country life as a kind of window into the past. Having succeeded in business and trade and established comfortable lives within city limits, they had little understanding of what it was really like to live on a farm. Few of them had any real desire to go back to a life of agriculture, when the conveniences of city life were so alluring, and the urban job market provided so much more opportunity for economic and social advancement than toiling in the earth.

These kinds of practical considerations did not stop them from romanticizing the land, the people, and the traditions of “Old New England” as represented by the ancestral small-farm lifestyle. Visiting the rural edges of American society as a tourist allowed these nostalgic urbanites to engage in the pretty parts of agricultural life, communing with their image of their Yankee farming forbears, without actually having to get their hands too dirty. Farmers surely didn’t mind, either, as long as their pockets were being lined with fresh city money.

As farm tourism was gaining popularity, maple sugarmakers slowly began to recognize the dollar signs attached to these nostalgic, country-loving city slickers. The cost of maple sugar was rising—by 1880 cane and maple sugar were selling for the same price\(^96\)—and sugarmakers needed to maintain interest in maple sugar as it lost its cost advantage in the market. In order to better take advantage of the economic opportunity that lay before them, sugarmakers started searching for ways to improve the market for their product. In Vermont, maple sugarmakers came together in 1893 to form the Vermont Maple Sugarmakers Association (VMSMA). The mission of the organization was to “improve the quality and increase the quantity of the maple product of the state.” The cover of the VMSMA’s 1894 pamphlet emphasizes the purity and authenticity of Vermont maple sugar and syrup, and provides a nostalgic depiction of “old fashioned sugar-making” to attract the attention of consumers.

This pamphlet provides a fine example of the kind of narrative that characterized maple sugar advertising at the end of the 19\(^{th}\) century. In a section on the history of maple sugar, the pamphlet describes the origin of the industry as dating to the early Euro American settlers, whose meager, difficult lives were yearly lit up by the start of the sugaring season. It begins,

The manufacture of maple sugar in Vermont dates back to a very early day. When the revenue of the farm was derived largely from the sale of charcoal, potash, wheat and potatoes, and the sweets for family use were derived almost wholly from the sap of the maple tree, this business was not engaged in for the purpose of supplying an article of commerce, but to provide for the demands of the household.\(^97\)

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Figure 16: Reproduced from Vermont Maple Sugar and Syrup. 1894. edited by V. M. S. M. s. Association. St. Albans, VT: Wallace Printing Company.
From an historical perspective there seems to be a glaring error here; the author of the pamphlet has chosen to completely omit the Indian origins of sugaring in favor of promoting an image of sugaring as a purely Euro American tradition.

Unfortunately this author’s omission of the hundreds of years of sugaring history belonging to Indians reflects a widespread trend in the late 19th century of rewriting the narrative to exclude the essential contributions made to the development of the industry by non-Euro American sugarmakers. In the 17th and 18th centuries the connection to original Indian sugaring methods was still quite fresh, and it was a widely accepted and published concept that Indians had indeed pioneered the first methods of extracting and concentrating maple sap. By the end of the 19th century, however, it seems that history was distant enough to be rewritten in the minds of the American public.

In 1890, anthropologist H. W. Henshaw wrote an article concerning the Indian origin of maple sugar, in which he sets out “to present some evidence tending to show that there is still another important product for which civilized man is indebted to the Indian. Allusion is made to Maple Sugar, the origin of the manufacture of which appears to be in doubt in the minds of some.” The evidence is overwhelmingly in favor of Henshaw’s conclusion that Indians did, in fact, come up with the idea for maple sugar long before Europeans, and in most cases actually taught them the art. The doubts about Indian origin to which Henshaw alludes indicate that, somewhere along the way, it became more convenient or more acceptable for some portion of the populace to envision maple sugar as evidence of Yankee ingenuity rather than the

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result of a long and rich Indian tradition.

By the time the VMSMA republished its pamphlet in 1939 the story of the origins of sugaring had been altered to give credit to the Indians, demonstrating the error of the original narrative. The original omission, however, made its impact in framing the way that consumers would continue to envision the “traditional” sugarmakers. Doubts as to the origin of maple sugaring in the hands of Indian communities persist to this day, perpetuated by unfamiliarity with the early methods of production, as well as a lingering sense of distrust in the technological creativity of Indians. If any readers here remain doubtful of the Indian origin of sugaring, I offer you the wisdom of a Kickapoo chieftain who once professed,

Can it be that thou art so simple as to ask me such a question, seeing that the Master of Life has imparted to us an instinct which enabled us to substitute stone hatchets and knives for those made of steel by the whites; wherefore should we not have known as well as they how to manufacture sugar? He has made us all, that we should enjoy life; he has placed before us all the requisites for the support of existence, food, water, fire, trees, etc.; wherefore then should he have withheld from us the art of excavating the trees in order to make troughs of them, of placing the sap in these, of heating the stones and throwing them into the sap so as to cause it to boil, and by this means reducing it to sugar?99

Regardless of the credit given to the originators of the art of sugaring, it is undeniable that by the turn of the 20th century in the United States maple sugar had become an article of interest for consumers looking to experience an authentic American tradition. Maple sugar, once just the ugly stepsister of the cane, had come into its own as a product rich with cultural resonance. Smart producers were learning the trick to a successful maple sugar market; not to sell as much as possible, but to sell smart. Expanding the cultural value of maple sugar had long been a primary

strategy of sugarmakers, whose efforts since the start of the maple sugar bubble had
worked wonders in generating consumer recognition and affinity.

In order to standardize the public face of “real” maple syrup, and to more firmly
embed the cultural association between pure maple products and the Yankee farm
image, the VMSMA designed a label for its members to use in advertising their
products. The label text assures consumers that the highest standards of purity are
upheld by the sugarmakers producing the sugar and syrup, under penalty of the
Association. By specifying standards by which the weight and quality of maple sugar
could be measured, the VMSMA creates a sense of reliability in the network of
sugarmakers willing to hold themselves accountable to the association’s expectations.

The label displays two photographs of a typical sugarhouse, images that
appear to provide the consumer with an intimate window into the life of a
sugarmaker. The upper left photograph depicts carrying sap through the early spring
snow drifts to the sugarhouse. The two men are performing difficult labor, but their
toil seems altogether attractive set in such a beautiful scene of pastoral tranquility.
The lower right photograph depicts the cozy, steamy interior of the sugarhouse, where
the two men now lounge comfortably on chairs as they watch the evaporator do its
work. Healthful outdoor labor, and peaceful country repose; a perfect narrative of
backwoods life. No doubt these images appealed greatly to those nostalgic urbanites
who longed for the return to their Yankee agricultural roots.
For the sugarmakers of the VMSMA in 1894, one of the most potent reasons for organizing into an association, and one of the greatest obstacles to the success of the sugaring business, was in establishing standards for sugar quality that would create consumer reliability in a product that was being sold in adulterated forms all over the country. The sale of adulterated and imitation sugars and syrups undermined the market for pure maple sugar and syrup. By then a highly recognizable and popular product, maple sugar was a good target for adulterators, especially those who sold their products in areas where maple production was practically nonexistent, and where consumer recognition of genuine maple flavor was limited.

Vermont sugarmakers were in the forefront the campaign to establish adulteration laws to protect the maple industry, a campaign spearheaded by the articulate advocacy of Victor I. Spear, then the president of the VMSMA. Spear wrote on the issue in the Fifteenth Agricultural Report for the state of Vermont. He explains,

There is no possibility of overstocking the markets of the country with maple goods, there is a possibility that people will get more glucose than they want under the name of maple sugar. Not being supplied with maple trees with which to compete with Vermont in making maple sugars, the West, more especially Chicago and Omaha, have undertaken to supply the demand for maple sugar by putting on the market a combination of glucose and corn and maple sugar, and selling it as pure maple goods. Some of the poorest quality of Vermont maple sugar enters in to the compound for flavoring purposes, and the darker the color and stronger the taste of the sugar used for this purpose, the higher the value.100

In 1903 Senator Redfield Proctor of Vermont, a lifelong maple supporter, wrote a letter to Spear to express his personal concerns about the way that adulterated maple syrups were tainting the marketplace, especially under the label of one particular

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100 as quoted in Lockhart, Maple Sugarin' in Vermont: A Sweet History, 112.
brand, Towle’s Log Cabin Maple Syrup,” the early precursor to the brand Americans know well today simply as Log Cabin Syrup. Proctor describes the shocking revelation that a product marked “maple” indeed seemed to have little or no real maple sugar in it at all. “Dear Spear,” he wrote,

Some of the leading grocers here are making a large display of bottles of “Towle’s Log Cabin Maple Syrup.” The label is that brand followed by “The Towle Maple Syrup Company, Burlington, VT. St Paul, Minn” . . . My butler got a bottle of this, but it is not maple syrup. I am going to see if they are amenable to the law for false branding, and would like to find out if they have any place of business in Burlington. I will enquire there, and perhaps you can. I cannot detect any maple taste in this, or very slight. If you have any leftover I wish you would send me the smallest box you put up of pint bottles, if you have any left, and I will not use this compound. I propose to visit the stores and show them the difference. One of them is a place where I have traded a good deal. If there is any way to bring the law to bear I will try it.\footnote{Ibid. 116}

Proctor made good on his promise; he investigated the “Towle Maple Syrup Company” to find out whether they in fact had a business in Burlington, and whether their product was in fact made with maple or some other substance. While to the taste it was clear that the product was not maple syrup, there was no way to prove that with turn of the century scientific methods. Proctor put the question to the \textit{Burlington Free Press}, and discovered that there was no Towle Company in Burlington, but that $30,000 worth of the poorest grade maple sugar was shipped from Vermont to the Towle Company in St. Paul. There, presumably, these sub-par sugars were blended with cane and beet sugars to provide the adulterated syrup with some hint of a maple taste.

The problem of maple adulteration was rampant, and garnered political attention even outside of primary maple producing states like Vermont. In a 1900 article published in the \textit{National Review}, Senator W. E. Mason of Illinois cites maple
sugar as a prime example of a more widespread problem with food adulteration which
was affecting many different food industries across the nation. He writes,

Thousands of barrels of maple syrup … are sold that do not contain ten per cent
of maple syrup …, and yet the article known as glucose, which is used to
sophisticate goods, is regarded by the experts as a perfectly safe, healthy and
nutritious food. This mixing or blending simply sells to the consumer what he
did not intend to buy, but it does not endanger the public health . . . Yet the fact
remains that all these articles should be marked and branded for what they are,
and a violation of that rule should be punished by a national law.102

The concerns of Spear, Mason and others did not go unheeded. In response to
concerns about the quality and adulteration of all kinds of American consumables, the
federal government passed the first Pure Food and Drug Act in 1906. The act deemed
“adulterated” food stuffs contaminated with materials that “reduce or lower or
injuriously affect its quality or strength,” and also all foods in which “any substance
has been substituted wholly or in part for the article.” This gave sugarmakers the
power of the law to enforce the sale of 100% maple sugar and syrup under the label
of a pure product.103

Unfortunately for maple producers, the mere passing of the Pure Food and Drug
act was not sufficient to extinguish the market for adulterated maple products; it
merely forced the advertisers of those products to get more devious about the way
they sold their wares. As American consumers of Log Cabin Syrup know today, the
Towle Company did not give up on Log Cabin Syrup when the act passed into law: it
merely changed the labeling of its product to remove its legal responsibility to
provide a pure maple product, while retaining the connection in the consumer’s mind

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103 United States. United States Statutes at Large (59th Cong., Sess. I, Chp. 3915, p. 768-772;
cited as 34 U.S. Stats. 768)
between Log Cabin and maple. In the late 1900s the company began issuing a line of syrup containers designed to look like little log cabins, labeled with a variety of phrases such as “Log Cabin Syrup, Absolutely Pure.” Pure, yes, but not pure maple; the labeling is clearly misleading, but the omission of the word maple from the label makes it legal.

Competition from the Towle Log Cabin Syrup Company and other imitation competitors may have taken a bite out of the pure maple sugar market, but maple sugarmakers continued to produce and to sell enough syrup to maintain a healthy Northeast tradition for authentic maple sugar products. Maple sugar and syrup continued to enjoy a reputation of purity and tradition that brought consumers to market across America. Sugarmakers who produced enough to sell to consumers beyond their neighboring towns often sold much of their product to wholesale dealers, who would either repackage the syrup for sale across the country, or resell it to tobacco and whisky manufacturers as a flavoring agent.

Maple sugarmakers faced tough economic times during WWII, when sugar rationing lead to a price cap on maple sugar. Maple sugar and syrup had been experiencing an increasingly specialized marketing trend which elevated it above the normal sweeteners of the day into a product worth spending a little more money on. Sugar rationing forced maple sugar back into direct competition with cane and beet sugars, holding the price down to $3.39 per gallon.\footnote{Maple History.} Maple sugar was reintroduced to “Mr. and Mrs. America,” who “now slip a lump of maple sugar or ... into the breakfast coffee.”\footnote{Edwin Neff, "Life Is Sweet, Anyway," The Science News-Letter 41, no. 15 (1942): 234.} While this backwards slide in the price of sugar was detrimental
in the short term, the kind of national attention that was brought to maple sugar as a result of sugar rationing may have increased consumer recognition and loyalty.

One of the most popular, if not the most popular, books on maple sugaring ever published was a work by Helen and Scott Nearing, entitled *The Maple Sugar Book: Together with Remarks on Pioneering as a Way of Life in the Twentieth Century*. The book, published in 1950, is a classic, known by sugarmakers today as one of the most reliable sources on sugaring history around. *The Maple Sugar Book* is, as the title suggests, a combination of instruction and history about the sugaring industry, as well as musings on the lifestyle of “pioneering” which led them to pick up sugaring in the first place.

Helen and Scott Nearing are better known for *The Good Life*, 1954, a book in which the couple describe their escape from New York City life during the depression to a farm in rural Vermont. The life history of the Nearings, as told through *The Good Life*, represents a classic success story for the 20th century “back to the land” movement. Depression era political and economic turmoil led many formerly content city dwellers like the Nearings to abandon urban life, returning to what they imagined to be just the kind of fulfilling, wholesome country lives that their farming forefathers led. The Nearings—childless, educated, ambitious, and willing to put in a hard day’s labor—managed to integrate themselves successfully into the physically demanding and culturally simplistic lifestyle of their new community in the backwoods of Vermont.

In *The Maple Sugar Book* the Nearings described one of their primary seasonal labors, sugaring, as a spiritually fulfilling pursuit that brought the
sugarmaker in closer contact with the forests, and with their own sense of well being.

They wrote,

Sugaring can bring one an honest living. And anyone who has ever sugared remembers the poesy of it to the end of his days. When the time of year comes round with sap rising and snow melting, there is an insistent urge to take one’s part in the process—to tap the trees, to gather the sap, to boil out the sweet syrup of the maple.\(^{106}\)

The Nearings imbued their sugaring experiences with the same kind of poetic stature that has elevated maple sugar above the ordinary for more than two centuries. To sugar is to commune with the land, to reconnect with the natural cycles of the forest, and to produce a sweet delicacy by throwing oneself wholeheartedly into the natural rhythms and labors of springtime.

The back to the land movement attracted a good number of former urbanites to the once-abandoned forests of the Northeast, in some places actually reversing the forest succession that had taken over the once clear and orderly farms of 18\(^{th}\) and 19\(^{th}\) century agricultural life. The movement attracted as many more as voyeurs, people who might read the Nearings’ book, indulge in the philosophy of returning to the land, and then continue on in their city lifestyle mostly unchanged in their daily habits. The attraction of the “Good Life” was strong, however, and for those not willing to fully take the plunge, there was still the option of farm tourism. Nostalgia for the American farm lifestyle, which had taken root in the turn of the century, only grew stronger as cities grew taller, denser and more noisy. By the mid-20\(^{th}\) century, the romanticization of the old American farm life was widespread. To a certain extent, the post-war suburbanization trends allowed the average American to make a

compromise between the conveniences of city living and the solitude and comfort of a rural community, but there was an undeniable distance between Pleasantville and Farmville, USA.

The latter half of the 20th century marked a trend among Northeastern dairy farmers who once practiced sugaring as a sideline business to begin shifting their commercial emphasis to their sugarbushes in the light of an increasingly favorable tourist economy. Vermont is a highly successful case study for the development of farm tourism, and maple is the most successfully marketed aspect of their tourist economy. With a combination of the high standards of quality for maple products upheld and constantly revised by the government of Vermont, as well as the ingenuity and foresight of commercially-conscious sugarmakers, the state has created a thriving tourist economy that today attracts thousands of travelers from all over the United States, and around the world.

Burr Morse’s family story is perhaps the best example of the way that former dairy farmers turned sugarmakers took advantage of a growing tourist industry to open up a market for their product. Today the Morse Farm Maple Sugar Works is one of the most recognizable tourist destinations in Vermont, almost up there alongside Cabot Creamery and the Ben and Jerry’s factory, although the national name recognition is not as high, because the Morses don’t sell their product in a national chain. The family business depends entirely on attracting tourists directly on site to their sugarhouse and store on the outskirts of Montpelier, Vermont.

Half a century ago, this model of success was but a dream in the head of Burr’s father, Harry Morse, a lifetime dairy farmer in Montpelier. Sugaring had been
in the family for six generations—Harry being the 6th—but always playing second fiddle to other agricultural pursuits, including most recently the dairy cows. Burr tells the family legend of the day that his father decided to give up milking cows, and start milking an animal that gives up its bounty a lot more easily—the tourist!

Chores of milking come two times a day. If you like it, you’re all set. If you don’t, you hate it. And I hate it. Neither my father nor I were cow people. My father got a little bit famous for um he milked cows until he was probably 50 years old. And always thought of anything else he might do with the farm that would get him away from that barn. He even looked at golf courses and stuff liked that. One night he came home from the milk barn, and took his boots off and sat down and said to my mother, he said “Dot, I made a decision tonight. Decided to have an auction, sell those critters, and try my hand at milking people.”

The site of the Morse Farm Maple Sugar Works today might as well be a replica of the iconic sugarhouse pictured on the VMSMA’s 1894 maple sugar label. On a bright early spring afternoon I drove up from Montpelier to visit the place. I knew I was almost there when I could see the smokestack of the sugarhouse merrily steaming away among the outlines of the bare trees against a clear blue sky. It was nearly impossible to find a place to park, with so many visitors’ cars and so much mud and snow filling every inch of parking space.

Unlike the sugarhouses of old, set back deep in the woods in the middle of the sugarbush and well out of reach of normal road access, the Morse sugarhouse is located right next to the road, and directly adjacent to the real moneymaker in the business, the store. The Morse Farm is visited by over 400 tour buses a year; visitors are given a guided tour of the sugarhouse and the sugarwoods, and a detailed explanation of the process of turning sap into syrup, along with some local color stories. The tour is free, but it is very hard to come away from the farm without

spending any money; at the end, tourists are shepherded into the store, where they are confronted with a full menagerie of maple and Vermont products, all packaged to give the consumer that down-home, farm-life feel. The maple syrup is the star of the show, of course, with hundreds of bottles, from two ounces to a gallon, lining the shelves.

The Morses are certainly not making a killing with their tourist business, but they definitely make a good living—and are longer totally dependent on a good sap running season to make a good profit in any given year. Learning from Harry, the Morses who run the sugarhouse today—Burr, his brother Elliott, and his son, Tom—have perfected the art of milking the tourist by telling them a story of the country life, sweetened by the rich flavor of home-made maple syrup. Burr, a natural-born writer, has published many stories of the sugaring season online, in local newspapers, and in two book-length memoirs, *Golden Times* and *Sweet Days and Beyond*.

Morse Farm syrup has traveled far and wide, carried away by tourists from around the globe, and even shipped by the Morses to certain favorite celebrities. “We sent some syrup to Oprah one year, and this other woman who was in jail for a while there, um, Martha Stewart.”

While the Morses rely heavily on tourists actually visiting the farm, another clever sugaring family has mastered the art of the Internet retail business. Sam Cutting, Sr. and Jr., the father-son team behind Dakin Farm, in Ferrisburgh, Vermont, have built their business and based it on a more “abstract” model of the tourist experience. Like the Morses, the Cuttings built their business next to a road in order to attract more customers. Unlike the Morses, however, their roadside store is not

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108 Ibid.
actually connected to a fully functional sugarhouse and sugarbush. What the Cuttings call their sugarhouse is little more than an attachment to the store, housing a small evaporator which they do not actually use to produce the syrup they sell. Indeed, the vast majority of the syrup the Cuttings sell is purchased from other producers around the state and from Canada. The sugarhouse on site is nothing more than a tourist attraction, used on bright spring weekends to boil sap that has been imported from another location so that visitors can have the “real” sugarhouse experience. A big red barn next to the store houses not cows, but a fully mechanized, modern shipping facility out of which the company ships its products across the country, and even abroad to some customers in other countries, including, most notably, Japan and Germany.

For decades much of the Dakin farm business has been in mail-order subscriptions. In recent years, however, Dakin Farm has taken the majority of its business online. Company executive Sam Cutting Jr. put his business degree to work, and led the company into the Internet sales world, as an early adopter. He explains,

> So we started in 1995, which was pretty early for a small business. And just threw our resources into the internet. We became a banner test site for Microsoft merchant server. We were one of 20 test sites in the world. We went to San Jose, CA, and there was Tower Records, and companies from Japan and India, and then little Dakin Farm. Bill Gates was walking around, and we’re handing him maple syrup.\(^{109}\)

As the Internet marketplace has grown over the last decade and social media has become integrated into online advertising, Dakin Farm has kept pace. “This year we’ve hired a public relations firm that specializes in social media,” Sam says.

“They’ll be doing five YouTube videos, professionally building our company

\(^{109}\) Cutting, Sam Jr.. Interview by Eleni Healey. Tape recording. Ferrisburgh, VT, July 24\(^{th}\), 2010.
Facebook page. Building a twitter schedule where we tweet 3 times, a day seven days a week. It’ll all build traffic.\textsuperscript{110} The Dakin Farm website – which is glossy and full of professionally designed photos of perfectly poured syrup and expertly cooked maple-smoked bacon -- makes use of the most modern and sophisticated technologies in order to create the profitable illusion of down-home simplicity.\textsuperscript{111}

In order to preserve the kind of awed regard and reverence with which maple syrup consumers regard the product’s classic maple flavor -- which sustains business for the entire sugaring industry -- state and federal agencies have worked hard to maintain and improve upon the quality standards pioneered by turn of the century sugarmakers. Today, sugarmakers are required by the government to produce syrup and sugar that matches mandated grading requirements for flavor, color, density and clarity. Syrup in Vermont is graded on a five-point scale, based mainly on color, which reflects changes over the season in the tenor and the depth of maple flavor. Sugarmakers receive yearly grading kits, which allow them to compare their product to the accepted standards. Generally speaking, the grades according to Vermont standards are as follows:

\textbf{Grade A Fancy}: the lightest syrup, possessing a delicate “bouquet” maple flavor, characteristic of the first runs of sap.
\textbf{Grade A Medium Amber}: a light syrup, with a slightly deeper maple flavor.
\textbf{Grade A Dark Amber}: a darker, more robust syrup, with a rich, distinct maple flavor.
\textbf{Grade B}: the darkest retail-grade syrup, often preferred by consumers who like the deep, pronounced maple flavor it holds.
\textbf{Commercial Grade}: sub-grade syrup, sold only in bulk commercial packaging.

\textsuperscript{110} Ibid.
In the state of Vermont, Henry Marckres in the Department of Agriculture oversees maple syrup regulation. Most of his work involves helping sugarmakers to make sure that their products are safe and up to grade. Marckres’ job mainly consists of visiting retail locations, and opening and testing syrup to make sure it matches the accepted grade standards for the year. When Marckres finds a problem, he gives the sugarmaker who produced the syrup a warning, allowing the proprietor time to pull the product off the market and fix the problem; he often travel to the sugarmaker’s place of business to try and help him or her solve it as well.

The primary method of testing syrup today is still taste. Marckres is a type-2 diabetic who has to regulate his blood sugar carefully when he’s out testing syrups.
And blood sugar isn’t the only danger he faces, either; Marckres has actually gone to the hospital twice after sampling syrup that had been accidentally contaminated with highly toxic substances.

Thanks to more than a century of oversight and increasingly advanced methods of detecting contamination, there isn’t too much amateur adulteration of syrup for profit in today’s market there is some fast and loose activity, but not enough to constitute a full-time job for regulators. However, the maple sugaring industry is still plagued to this day by the competition posed by imitation maple syrup products. While the standards regarding the labeling of non-maple syrups are stricter today than ever, the companies which produce those products have only gotten cleverer and more wily at circumventing them. At the supermarket today, consumers can choose from any number of different styles of “table syrups.”

One of the most popular brands, which has been going strong for over a century, is Log Cabin brand syrup. Log Cabin syrup has come a long way since it was first introduced by a company called Towle in 1887. Not only has it become a household name, but many consumers actually prefer the ersatz taste of Log Cabin -- and other similar imitation maple products -- to the authentic taste of actual pure maple syrup. The advertising on the Log Cabin website demonstrates the clever two step that this company has performed over the decades -- to simultaneously obey labeling laws and continue to trick consumers into believing they are getting an authentic maple product. Under its “Brand History,” the website claims that “Log Cabin continues to stand for the most authentic syrup, known for its unique maple taste. There is a good chance our grandfather’s grandfather grew up using Log Cabin
syrup.” Authentic syrup? True maple taste? With this kind of shifty language, the Log Cabin hucksters have made fools of both consumers and regulators alike.

In its most recent marketing campaign, however, the Log Cabin company seems to have crossed the line, inflaming sugarmakers across the Northeast and provoking them to fight back against what they see as a blatant rip-off of traditional pure maple syrup packaging: the major offense is the misuse of the phrase “all natural” to describe a product that includes such ingredients as Xantham gum, caramel color -- and only 4% maple syrup. In 2010, Henry Marckres and the Department of Agriculture in Vermont brought this issue to the attention of the FDA, charging that this labeling was a deliberate attempt to deceive customers, and to convince them to buy a product that looks like pure maple syrup, but is really nothing more than a blended concoction of cheaper sugar syrups with added “maple” flavorings. United States Representative Peter Welch of Vermont stated in a letter to FDA commissioner, Margaret Hamburg, “While most Vermon ters have a discerning eye and palate for real maple syrup, the countless consumers outside of our state who have come to expect quality from natural Vermont products may be fooled by this misleading labeling.”

The FDA has not yet decided on this case, although officials from Pinnacle Foods, Log Cabin’s parent company, are adamant about the legality of their labeling and ingredients. Pinnacle Foods did agree to take out the caramel color, which was generally agreed to be an unnatural additive, but other questionably natural ingredients remain, and of course, there is still the problem of false advertising in the packaging, which Pinnacle Foods squarely refused to address. Their press release reads:

Log Cabin All Natural syrup provides consumers with a value-priced table syrup choice made from all natural ingredients, in full compliance with FDA regulations. We’d like to thank Congressman Peter Welch and Vermont
Agriculture Secretary Roger Allbee for alerting us to the FDA’s voluntary guidelines regarding the addition of color to a natural product, even if from a natural source. Although this product does not pose any health or food safety issues, we are changing our recipe to remove caramel color immediately. With regard to the other ingredients, xanthan gum and citric acid are natural plant-derived ingredients. We have reached out to Congressman Welch and Secretary Allbee to discuss our changes and reinforce our commitment to producing high quality products.\textsuperscript{113}

Many sugarmakers today are quite bitter about the way that Log Cabin has manipulated consumers’ minds and spending habits; the sugarmakers contend that Log Cabin is foisting off on consumers a product that is essentially no different than the adulterated syrup banned by the Pure Food and Drug Act in 1906, -- except that the designers of this latest product have gotten smarter about following the letter of the law, while essentially ignoring its purpose: protecting the market for pure maple sugar products.

When Paul Cate brought me to his sugarhouse in East Montpelier Vermont, he quipped, “so this is this is where all the Log Cabin syrup is made you’ve heard about that, Log Cabin maple syrup you know you can buy in the store.” I joked back, “Oh yeah, you get corn syrup out of those trees? How do you manage that?” “Well the big field of corn right over there we tap all summer and fall,” he laughed. “Hah. No, we make \textit{real} maple syrup, none of this fake stuff.”\textsuperscript{114}

While it is easy to vilify companies like Log Cabin whose cheap imitation products siphon market share from the sugarmakers producing authentic, quality products, there is no denying that pure maple syrup is not priced to make it affordable

\textsuperscript{114} Cate, Paul. Interview by Eleni Healey. Tape recording. East Montpelier, VT, July 19\textsuperscript{th}, 2010.
to the average consumer. Maple syrup is an expensive commodity, which sells today for as much as $70 a gallon. The average American household is simply not going to spend that much on pancake toppings. Outside of communities where maple syrup is being produced and distributed by neighborhood sugarmakers, maple syrup is increasingly priced out of reach of the everyday consumer.

The average price point for maple syrup today is controlled by Canada, which produces as much as four or five times the amount of syrup as does the United States in any given year. Canadian producers, mainly based in Quebec, operate on huge tracts of forest, much of it government-owned land, and their production has been regularly sometimes subsidized by the Canadian government. Canada also maintains reserves of syrup that allow it to control the international market price for syrup. Most of the syrup consumed in the United States is actually Canadian—if the packaging doesn’t explicitly state that it is American syrup, or that it is sourced from a single state or farm in the United States, it is almost guaranteed to be Canadian syrup. Because Canadian syrup can be produced more cheaply than American syrup, significant regulation goes into making sure that syrup is labeled properly, as Canadian or American, and that the product is priced accordingly.
American maple syrup producers thus not only compete with imitation syrups, but also with cheaper and more abundant Canadian syrups, providing yet another marketing challenge. Vermont sugarmakers have been particularly successful in distinguishing their syrup by the professed quality of the product, rather than by price competition. By relying on decades of high standards for sustainable production and syrup quality in the state, producers who market syrup as pure 100% Vermont syrup can sell their syrup at a higher price than other products on the market. Heavy investment in Vermont sugaring tourism has had a large, positive effect for Vermont sugarmakers. It is no accident that one of the first things, if not the first thing, that comes to mind when a consumer thinks of Vermont, is maple syrup; nor is it by accident that Vermont has by far the greatest yearly production in the United States. Vermont does not actually have more or better sugar maple forests than any other state; it has just put the woods to much greater use.

Even as technological advances concentrate much of the overall maple production into the hands of fewer, larger producers who are reliant on high-tech,
super-efficient technologies—every year hundreds of undaunted new producers are entering the industry. Leader Evaporator Company sells over 125 new small evaporators every year in Vermont, an investment in hobby-level sugaring that costs about $1100. Peter Purinton—whose own vast sugarbush produces 1% of Vermont’s overall production—also regularly sells maple equipment to people who begin as hobbyists, many of whom, he says, will soon expand their operations into lucrative small businesses. He believes that

A true sugarmaker has one goal: to make a little more sugar than they made last year. I tease people, because I sell maple equipment to weekend sugarmakers and stuff. They want to only make a few gallons of syrup. And so they might come buy some filters, and I warn ‘em. I say be careful, it’s very addictive. You see the trees that you want to tap the first couple years. And if you find yourself thinking, oh, there’s one there… you’re in trouble. And when you run out of trees, your neighbor owns trees. I would dare say fifty percent of the people that I’ve told that to come back three or four years later, “I need a little evaporator. You were right.”

The look and feel of the typical modern sugaring operation is wildly different than it was 50 years ago. Almost every sugarbush, including ones as small as 500 taps, is set up with tubing and run on vacuum pressure. Most sugarmakers who operate on the scale of thousands of taps utilize reverse osmosis water extraction, and invest regularly in increasingly automated, high-efficiency evaporator systems that can draw off thousands of gallons of syrup an hour. Syrup that isn’t packaged for the local retail market is packed in 50-gallon drums and sent off to vast packing facilities which process millions of gallons of syrup a year.

Despite these obvious shifts in the reality of a sugarmaker’s experience, the image the public retains regarding the origin of maple syrup remains lost in the

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storied past. When many consumers envision maple syrup production, images of horse-drawn sleighs, hanging buckets and woodsmen on snowshoes likely dance through their heads. A substantial part of the appeal of maple syrup today—as it was one hundred years ago, as it was two hundred years ago—is in the almost mythical relationship the consumer feels exists between syrup and the innocent, simple backwoods lifestyle of the American farmer.

As the industry moves forward, sugarmakers are starting to catch on to the organics trend, with increasing numbers of producers jumping through the hoops and paying the price to become certified organic businesses. For sugarmakers, becoming certified as organic generally means not using any fertilizers or pesticides in the woods; not using any non-organic compounds in the production process, and working out a long-term management plan for the sugarbush that sustains the health of wildlife. On those terms, most producers run essentially organic operations already. The certification process can be arduous and expensive, however, and many smaller producers are not interested in making the requisite investment. Ray Morvan, a former engineer who now works 5,000 taps in Northfield, Vermont along with his wife, Hannah, is among those sugarmakers who are abstaining from organic certification. “We were going to become organic, and we’re organic anyway,” he said. “But I saw the records I had to keep, and I turned it down. It doesn’t make any difference, because people know you’re organic anyway.”


The maple sugar industry is in a good place right now from the perspective of the consumer climate, and its continued prosperity is aided by the intersection of two phenomena: first, maple sugar enterprise is buttressed by the deep cultural connections that exist between human beings and a force of nature (the sugar maple) that produces a sweet foodstuff; this continually enriches maple syrup’s standing; furthermore, since ever increasing attention is being paid by conscientious consumers to all-manner of natural, organic and sustainable food products, maple sugaring, a classically ecological undertaking, naturally attracts more and more attention for all the right reasons.

Sugarmakers will no doubt continue to face competition from the imitation syrup market, especially as we continue to endure a stubbornly tough economic climate. As consumers become increasingly educated about, and concerned with, the sources and ethical consequences of their food choices, however, it is likely that producers of pure, organic maple syrup will continue to find an eager market for their product.

No matter how strong the market for maple syrup becomes, there is one unassailable fact: there will be no sugaring industry without maple trees. Going forward, sugarmakers must be aware of the looming environmental threats that could destroy the sugar maple industry, not to mention decimate the glorious stands of maple trees that are the sine qua non of that industry. An Asian Longhorn Beetle infestation could destroy thousands of acres of sugar maple forests before scientists and sugarmakers were even aware of it. If the predictions of climate scientists are correct, it is also possible that the sugar maple will simply no longer be able to
survive in an inevitably warmer Northeastern climate. Sugarmakers today have little to no direct control over the outcome of these environmental threats, tied up as they are in the epic clashes affecting globalization today, namely the struggles between the carbon polluters and the environmentalists. The balance of climate and ecosystems that nourishes the growth of sugar maples, and allows them to thrive and produce sugar, is incredibly delicate. The increasing pressure that may weigh upon the sugaring industry because of climate change, could act in an enlightened world, as the proverbial “canary in the mineshaft,” opening the eyes of our society to the growing threat that environmental change—change of course accelerated and aggravated by the effects of human activity on the planet—is posing for the future of our world. Let us hope that the canary doesn’t have to die in order to make its message heard.

The future of sugaring will certainly depend in part on the unfolding of potential, and perhaps avoidable, environmental catastrophes, but also on the ability of sugarmakers to continue to increase their efficiencies, both in energy economy and in stand management, in order to continue supporting a non-vital industry in an increasingly resource-poor world. Maple sugaring today works as a positive force in the management of Northeastern forest resources, because it promotes the maintenance of healthy living forest ecosystems, which might otherwise be harvested for timber. Going forward, we can only hope that sugarmakers continue to be good stewards of the land, using technologies wisely, and as concerned as much for the health of the forests as for the balance in their checkbooks. The next generation of sugarmakers, and sugar-eaters, depends on it.
Postscript

Preserving the heritage of sugaring is as important to the future of the industry as is preserving the sugarbush. America’s sugaring heritage today is strong. As it is transmitted to future generations, the story of maple sugar remains both firmly rooted in the past, and also inexorably connected to the future of the Northeastern landscape. Books on sugaring abound, many of them directed towards educating children about the rich cultural history that underlies the syrup they pour over their pancakes. Public demonstrations of sugaring are ubiquitous, from formal tourist destinations like Old Sturbridge Village in Massachusetts to open house weekends at working sugarhouses all across the Northeast. Maple sugaring has been incorporated into the curricula for many young children, and it has been used in both science and history demonstrations to enrich the cultural experience of learning. Indeed, maple sugaring has become such an ingrained aspect of the culture that all Americans—especially Northeasterners—might see a little bit of the sugarmaker in themselves.

Sugaring suggests a kind of primal generativity which appeals to our deepest sense of what it means to be alive; not just to exist, but to grow and to create. Henry David Thoreau perceived a deep resonance between the production of maple sugar, and the profound creative forces that inspired him as an author, and allowed his talent to pour forth, as it were. He writes,

While he [the sugarmaker] works in his sugar camp, let me work in mine— for sweetness is in me, and to sugar it shall come;—it shall not all go to leaves and wood. Am I not a sugar maple man then?\textsuperscript{118}

For Thoreau, then, the essence of sugaring lies in drawing the sweetness out of life. For the “true sugarmaker,” the scope of sugaring goes well beyond defining one’s occupation, one’s source of income or even one’s livelihood. The production of sugar becomes the definition of one’s spirit, a transcendent physical embodiment of that creative impulse after which Thoreau so deeply yearned.

Some real-life sugarmakers have chosen to celebrate the great impact that sugaring has had in shaping their lives, and have preserved their family heritages in the syrup jug—in the case of the Morses, quite literally. When it came time to lay their parents to rest, 7th generation sugarmakers Burr and Elliott Morse thought long and hard about how best to commemorate their folks, who had passed on to their children not only a very successful tourist business, but also a deep and lasting passion for sugaring. After much consideration, Elliott figured out the perfect place to put their parents’ ashes, a site that would celebrate this important heritage:

I said, well since they were sugarmakers extraordinaire, we should put their ashes in a plastic sugar jug! So we took a half-gallon plastic syrup jug and a funnel, and we put their ashes in that. And they say plastic will not decompose for 10,000 years. So my folks are living in a syrup jug.119

What more fitting way to honor a life dedicated to sharing the magic of the sugar maple tree with the world than to end it nestled in for perpetuity with the sweet smell of pure, 100% maple syrup?

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Maple Sugar Recipes

Every good book on maple syrup I’ve come across has had a section for maple recipes. I figure I should add one to mine, too, for good measure. While it is my sincere belief that maple sugar and syrup can (and should!) be used wherever any kind of sweetener is called for, there are a few recipes I have tried in which the maple flavor plays a big role, and the result is especially delicious. Read on to sample a few of the tastiest things I learned through my research.

Nutmeg Maple Cream Pie (Adapted from SmittenKitchen)

This recipe won me second prize in the world-renowned Pie Day competition in Wesleyan’s American Studies department. It takes a fair amount of time to make, but it is well worth the effort.

¾ cup maple syrup (grade B is best for this)
2½ cups heavy cream
4 egg yolks
1 whole egg
¼ teaspoon salt
1 teaspoon freshly grated nutmeg
1 teaspoon vanilla extract
1 pre-baked 9-inch pie crust.

1. Preheat oven to 300 degrees. In a medium saucepan over medium-high heat, reduce maple syrup by a quarter, 5 to 7 minutes. Stir in cream and bring to a simmer. Remove from heat.

2. In a medium bowl, whisk together egg yolks and egg. Whisking constantly, slowly add cream mixture to eggs. Strain mixture through a fine-mesh sieve into a cup or bowl with pouring spout. Stir in salt, nutmeg and vanilla.
3. Pour filling into crust and transfer to a rimmed baking sheet. Bake until pie is firm to touch but jiggles slightly when moved, about 1 hour. Let cool to room temperature before serving.

Yield: One 9-inch pie, 8 servings.

Maple Salad Dressing

My friend Irene Horbar, who welcomed me into her home this summer while I was doing research up in Charlotte, VT, showed me this recipe. We used it on fresh romaine lettuce and sungold tomatoes from Irene’s garden. The original recipe comes from The Mountain School in Vershire, VT.

1 cup balsamic vinegar
1 cup canola oil
1/4 cup Dijon mustard
1/2 cup maple syrup
5 med garlic cloves, minced
1/2 tsp salt
1/2 tsp pepper

whisk it all together, and store in the refrigerator.

Yield: 2 3/4 cups.

Maple Syrup Gingerbread (Adapted from Sugaring Time on the Farm, by Luthera Rainville)

1 cup maple syrup
2 1/2 cups all-purpose flour
3 tbsp butter
1 tsp baking soda
1 tsp ginger
1 cup boiling water
1/2 cup maple cream (see recipe)
candied ginger for garnish

Preheat your oven to 375° and grease an 8-inch square pan.

Combine the maple syrup, butter and ginger in a large bowl. Stir in the flour. The mixture will be stiff. Dissolve the baking soda in the boiling water. Pour immediately
into the other ingredients. Beat well. Pour mixture into the pan. Bake for 20 to 25 minutes. Cool in the pan on a wire rack.

When cooled, spread the top with maple cream, and garnish with pieces of candied ginger.

Yield: 8 servings.

**Oat and Maple Syrup Scones** (Adapted from SmittenKitchen)

*If you love scones as much as I do, and you actually want to share these, you’re going to want to double the recipe…*

1 3/4 cups all-purpose flour, plus extra for dusting surface  
1/2 cup whole wheat flour  
1/2 cup rolled oats (I used quick-cooking)  
1 very heaped tablespoon baking powder  
1 very heaped tablespoon granulated sugar (maple if you can get it!)  
1/2 teaspoon table salt  
3/4 cup unsalted butter, cut into pieces  
1/4 cup maple syrup  
1/4 cup milk or buttermilk  
1 egg, beaten (for glaze)

Preheat your oven to 400°F (200°C), and butter a baking tray.

Whisk the flours, oats, baking powder, sugar and salt together in a large bowl. With a pastry blender or your fingertips, work the butter into the dry ingredients until the mixture resembles fine breadcrumbs. In a small dish, combine the milk and syrup, then add these liquid ingredients to the butter-flour mixture. By hand or with a rubber spatula, bring everything together to form a softish dough. If it feels too dry, add a little more milk but not enough that the dough is sticky. “The dough should not be sticky at all,” the book admonishes.

On a lightly floured surface, pat or roll the dough out until it is 1 1/4 inches (3 cm) tall. Using a 2-inch (5-cm) cutter, cut the dough into rounds and place them on the prepared tray so that they almost touch. Glaze the tops with beaten egg and bake for 20 to 25 minutes until the scones are lightly golden.

Yield: 8 to 10 scones.
Maple Syrup and Vanilla Ice Cream

*This recipe is an absolute classic, and perhaps the best way to sample really good quality syrup. One bite and you’ll never want hot fudge again.*

Drizzle the finest maple syrup over top-quality vanilla bean ice cream. Warm up the syrup if you want to get really fancy… That’s it!

The Thirsty Lumberjack (title inspiration courtesy of Charlie Drake)

*My Aunt Leah and Uncle Jim sent me a beautiful flask full of maple syrup in honor of my thesis. I promptly emptied the syrup into a clean jar, leaving a few licks of syrup in the bottom of the flask, and filled it the rest of the way with bourbon. Instant classic.*

1 oz Bourbon
1 splash Maple Syrup
1 ice cube

Put all ingredients in a glass. Mix to incorporate syrup. Drink.

Yield: one quenched lumberjack.

Maple Syrup on a Spoon

.... *Well, you know what to do!*
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**Interviews**

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