BENEATH THE SUGAR MOON

BY CHARLES CAPALDI

We've been on a collision course with artificial and instant foods in the United States for 130 years. The first ready-mix for pancakes was sold under the Aunt Jemima™ name in the 1880s. Since then, our pervasive culture of corn has invaded almost every belly and gas tank in the country. We feed corn to our cows, fill our cars with ethanol blends, and through a combination of chemistry, genetic engineering, and government subsidies, turn its kernels into a myriad of products ranging from soda pop to maple-flavored corn syrup. Of course, most of us don't think of it that way, thanks in part to the magic of advertising.

I grew up with the image of Mrs. Butterworth™ firmly implanted in my brain, not that she ever slid gracefully across our table and chatted with me over breakfast.

"See how the leading syrup just runs over this stack while Mrs. Butterworth takes her own sweet time" she intoned in the late 1970s, a translucent, maple-colored eye winking disconcertingly "Now *my* syrup has *got* to be thick to pour this slow. Truth is, Mrs. Butterworth is twice as thick as the other leading syrup."

Truth is Mrs. Butterworth's™ is corn syrup. Truth is, there isn't a drop of maple in the bottle. Truth is Mrs. Butterworth™ is all about thick, not taste. *Thick* being the operative word in the commercials, her fat rolls jiggle as she readjusts the label which doubles as her apron.

Sugar-free maple-flavored corn syrup has been around for the past 20 years. Lite maple-flavored corn syrup has been around for the past 30, and for all that, manufacturers of pseudo-maple syrup can't even be bothered to spell the word 'light' correctly. More than a century and quarter passed before the current owner of the brand "developed" a line of pure, unadulterated maple syrup in 2007. "Sourced from the finest sugar maple trees during the peak season" its investor information packet announces proudly – *sourced*, not tapped, as though the sugar bush were a mere group of vendors, rather than a grove of trees. The marketing-speak sounds pretty good – until you put it to the reasonableness test.

Simultaneous with the arrival of the first bottle of Log Cabin™ Pure Maple Syrup at Sam's Clubs across the nation, the locavore movement took on a life of its own and popularized the use of locally grown ingredients. Being a locavore is all about taking advantage of seasonally available foods that can be bought and prepared without the need for additional preservatives. According to the *New Oxford American Dictionary* which made the term their word of the year in 2007, a locavore is "one who endeavors to eat only locally produced foods."

In the 1970s, the homesteading movement was in full swing and folks swarmed from points south to rural locations, hell-bent on producing their own food and going off the grid. Fast-forward to 2005. A group of four women in San Francisco challenged local residents to eat food grown within a 100-mile radius. Since then, journalists in Manhattan have taken up the locavore challenge and written about their experience for the *New York Times*. *Time Magazine* ran a cover story about local food and locavores, folks committed to reclaiming our ecosystem, our food, and our time. Time which can be measured equally by the tick-tock of a grandfather clock, the silent flow of sand grains passing through the narrow aperture of an hourglass, or by the rhythmic drip–drip–drip of maple sap from the end of a single tap.

Making the time -- or more accurately, taking the time -- implies a life driven by the seasons, something the first peoples understood all too well. The Abenaki, the Amerindian tribe that first populated northern Vermont and Southern Quebec, lived life according to nature's cycles. The appearance of the sugar moon marked their departure from winter camp and their subsequent arrival in the sugar bush - the woods where they would collect sap to turn into maple sugar.

What did Mrs. Butterworth™ ever do for the woods? Nothing. *Real* maple syrup producers help sustain forests as edible and working landscapes. The symbiosis between (wo)man and forest cuts a deep path through the collective past of humanity.

The woods have done a lot more for us than simply stave off global warming, judging from the history of wood elves, sprites, and dryads that have populated the human imagination back to antiquity. In Greek mythology, the dryads were female spirits who presided over the groves and forests. Each

dryad bonded to an individual tree which she lived in, or near. The life of a dryad was intrinsically connected to that of her tree. Cut down the tree and you'd unwittingly kill the dryad with the same felling stroke – something for which the gods were likely to punish any unsuspecting mortal.

As adults, we lose the sense of wonder and majesty that comes from valuing trees as a life form. The temptation is to measure their value in terms of the number of BTUs they will produce in our wood stoves, or the number of board feet they will yield at the sawmill. Children innately retain this sense of wonder, until it is beaten out of them by talking bottles of Mrs. Butterworth's™.

My children play in a sacred grove populated by a stand of century maples – venerable old trees with knobby protrusions and limbs as thick as a man's torso. Their favorite tree sports a rope swing and a tree fort that has been there so long the branches to which it attaches have grown around it. The tree itself is so big that when I try to wrap my arms around it, they extend to each side as if I were hugging a wall. (Note to self: Stop hugging trees when a car is coming down the road.) Our grove has served as a burial ground for pets who met their untimely demise on the dirt road that skirts our property. It's the coolest place on the farm during the heat of the summer. In winter, the kids build igloos and snow forts around the drip line of its crown. But the area represented by the crown and trunk of each tree is representative of only that 50% of the plant which is visible above ground. The other invisible 50% exists as a subterranean network of roots that serves as a veritable net of nourishment, and as a network for messages passed from plant to plant. Internet chat rooms and online messaging may be relatively recent phenomena for humans, but evidence suggests that plants have been networking this way for millions of years.

Dr. Josef Stuefer, a researcher at the Radboud University in Nijmegen, Netherlands, discovered that plants linked by vegetative networks exchange information to increase their chances of survival.

"We were very surprised at how communicative plants really are" said Dr. Stuefer. "We looked at the common clover and discovered that they 'talk' through networks to warn of approaching attackers such as caterpillars."

Caterpillars aren't the only attackers to trigger clover's natural defenses. Over-grazing causes the plant to emit chemical compounds, such as cyanide, which can be toxic to animals that are sensitive to them at low concentration. Horses, for instance. Luckily for those of us who love maple syrup, networks of maple tree roots do not appear to act in the same way under the stress of being tapped – at least, not in terms of producing toxic compounds. However, their root systems, as well as those of birch and elm do become active long before those of other trees. It is this early activity which makes it possible to collect sap during the freeze-thaw cycle.

When the air temp goes below freezing, pressure decreases within the wood causing the tree to draw

up increasing amounts of water through its roots. During a thaw, the wood is under pressure, causing the sap to drip, or even flow. A Wawaniki Indian legend tells the story of Glooskap, the leader of the Wawaniki, who came upon the members of his tribe lying under maple trees and letting the sap drip directly into their mouths. Glooskap, appalled by their laziness, poured water into the trees to reduce the sweetness of the sap. This meant his people had to gather the watery sap and boil it for syrup. Regardless of its origin, maple, birch and elm saps have been boiled down to form syrup since the dawn of recorded history, and probably before. This cycle is at the heart of the Abenaki sugar moon, as well as the sugaring season for maple syrup producers like Willy and Maryann Tetreault.

As I headed up Bates Hill, my studded snow tires slipped on the patchwork of ice that still clung tenaciously to the road. The only sign of human passage through the sugar bush was the delicate web of blue tubing that glinted against the rising sun, joining together the sap from individual trees in the Tetreaults' sugar bush. The single droplet that forms on the stile of one tree joins the droplet from another, and another, and so on, until a veritable stream of sap is flowing downhill into the modified bulk tank that serves as a collector.

"Sugah'in" as many Vermonters refer to maple syrup production, is both big and small business in this neck of the woods. Vermont is the largest maple syrup producing state in the U.S., providing 37% of the U.S. crop in 2000, roughly 460,000 gallons of syrup. It was the first state to pass a maple law, and Vermont maple syrup meets or exceeds the standards of quality, purity and density of all maple-producing states and provinces on either side of the border. Well, it should: the climate and soil are ideal for maple syrup production, and the people are equally as well suited for it. It is quite a gamble to produce an agricultural product completely dependent on the vagaries of Mother Nature, and you've got to love being in the woods with snow up to your hips, followed by sweating to the oldies in a sugar shack that feels like a sauna as the sap is boiled down.

Sugarin' is part of a local tradition dating back to colonial times. Sugar shacks dot the landscape and small signs announcing "Maple Syrup for Sale" dot front yards and driveways everywhere you turn.

"There's no quicker way to lose money," said Rick Marsh, a syrup producer in Jeffersonville, Vermont. "[But] you get to know the individual trees on your land so well that you miss the ones that are gone, and are proud to see new healthy saplings grow into tall and healthy trees that will be used for maple sugaring for generations to come."

Maple producers seem to relish the time spent in the sugar bush almost as much as they enjoy the maple syrup produced, quite literally, by the sweat of their brow. Willy Tetreault's wife, Maryann, invited me out to watch them check the lines and so I found myself, one ill fated February day, standing in front of a

tree-trunk of a man, with a quiet voice, a gentle smile, and a carefully groomed mustache that sits squarely on top of chiseled features, punctuated only by a dimple in the center of his chin. His doe brown eyes were soft in contrast to his rugged frame ... until he slipped into a pair of high tech snow shoe. His muscles twitched in anticipation and his eyes glinted with purpose. It was a cold day, and at least two or three feet of snow still covered the ground in the sugar bush ... or, more accurately, the sugar slope, which nestled alongside their house and sugar shack a mere 100 feet away. I should have known that I was in for it as I struggled to strap on the fancy snow shoes, until his nephew, Daniel, took pity on me and "laced me up" as if I were a child.

Off we went ... up the hill, down the hill, through holes in the snow three feet deep, over waist-high tubing, and around the trunks of trees. Some were a mere 10 inches in diameter, a size only reached after only 40 years of growth and warranting a single tap per tree. Others were much, much larger, evidence of generations of growth and requiring two or even three taps. At each tree, Daniel and Willy checked the stiles and the tubing, replacing them where needed, drilling a new tap here and taking out an old one there. The deer wreak havoc with the tubing over the winter, as does the snow, the wind, and an SFJ reporter with a lard ass and clumsy snow shoe skills. On more than one occasion, I found myself stuck with my body in the hole and my snowshoes sticking out, unable to get up. More often than not, it was a hole that both Daniel and Willy had just passed with ease – and they were toting along a power drill, hammers, tubing, stiles... They were good sports with the patience of Job, lending a hand to get me back up, or stopping to chat while I caught my breath.

Scientists may not fully understand the mechanism of sap flow, but Willy Tetreault does – tap over a big root or under a big branch, wait for days with temperatures above freezing and nights below-freezing, have big piles of wood standing at the ready with which to stoke your boiler and work, work, work. Many syrup producers follow tradition and tap on the south side of the tree, reckoning that the south side warms up more quickly than the north. Scientists say "not," and Mrs. Butterworth™ remains mute on the whole subject. The process is like beekeeping in that the "livestock" aren't domesticated – the farmer, the maple syrup producer, the beekeeper, is simply marshaling the forces of nature in order to bring in his crop. The single greatest factor in doing so is timing – doing the right thing at the right time, based on experience, knowledge and skill.

Whether the sap is collected in buckets and returned to the sugar shack multiple times each day by hand or by horse-drawn sled, or whether it is gravity fed downhill and transferred to the sugar shack by means of a vacuum pump, the sap is useless in its raw form.

On average, maple sap contains 2% sucrose by weight (and sucrose content can range from 1% to

4% depending on the season). The enzymes are what lend it its distinctive maple taste – a flavor you can intensify by evaporating the water ... not an inconsequential task.

The Tetreaults use an "RO" – a reverse osmosis filter - which removes 75% of the water contained in the raw sap. The sap must still be boiled down as soon as possible so that it doesn't start to break down, or worse yet, spoil.

The RO reduces the amount of wood used to feed the boiler, and perhaps more importantly to the Tetreaults, the amount of time that is necessary to turn their sap into syrup.

"Why don't you come by with your kids?" said Maryann over the phone. "My whole family will be in the sugar shack tonight. The sap is flowing pretty well."

She didn't have to offer twice. My kids were bundled up and in the car waiting before I had hung up. They fancy themselves connoisseurs of maple syrup – pouring it onto their porridge in the morning, using it to sweeten yogurt, and of course, slathering it onto sourdough waffles or cornbread on baking day. Mrs. Butterworth™ gets no respect from my brood, but Maryann, her husband Willy and their son Adam, get all the respect they deserve – helped along by Dixie-Cupfuls of maple syrup served up from a large pitcher.

Built in 1957, the Tetreaults' sugar shack sits on a hillside like a window into the past. A stone wall dating back to the American Revolution traverses the property. Mountains of split cordwood stand at the ready, some under cover and some not, ready to feed the gaping maw of the boiler. The sugar shack itself, covered in a weather-worn coat of ox-blood red barn paint, burps gales of steam through the louvered vents of the cupola that pierces the tin roof. From the top of the hill, the steam rises in a

soft white column, soaring above the trees and above Lake Salem, which nestles comfortably in the cleft formed by two nearby hills.

As you walk through the door, the sugar shack is blanketed in a thick fog of steam. The ghost images of Willy, Maryann and Adam glide in and out of focus as they move about tending to the myriad

tasks associated with sugaring. A thin film of sweat glistens on Willy's brow as he hustles between stoking the boiler, checking the sap in the syrup pan, and reveling in the glow of the lights on the front of the RO – this year's addition to the equipment.

A fire is kindled under the arch that supports the evaporator pans. First the sap enters the flue pan, which has deep channels that permit the sap to flow through with maximum heat exchange, encouraging vigorous boiling and the release of lots of water vapor. Clouds of steam are captured by a large metal box over the flue pan. This recovered steam is used to preheat the incoming sap, jump starting the evaporating process and providing an almost limitless supply of pure, hot water for cleaning the sugar shack at the end of a long day (or night's) boil.

Float valves regulate the flow of sap and syrup, maintaining an optimum level for the most efficient boil-down. As the remaining water is boiled off, the sap enters the syrup pan which is actually a series of stainless steel vats, open at each end, through which the reduced sap can flow. At a mere 7.1 degrees above the boiling temperature of water, and a density of 66.9% sugar, the sap officially becomes maple syrup. A thermometer and hydrometer measure these qualifications out to at least two decimals of precision. Still, as he runs back and forth from stoking the fire to checking the RO, Willy dips a ladle of syrup, watching carefully as he pours it back into the syrup pan. "Just checking on it, that's all," he says with a grin before disappearing back into the fog.

An electronic draw off valve is extra insurance for the sugar maker. It releases the syrup at the proper density and deposits it at Maryann's station at the filter press. At 4' 9" tall, Maryann's diminutive frame is dwarfed by Willy's, not to mention by the 55-gallon drum of syrup that she is in the process of filling. But make no mistake about it, there is nothing Lilliputian about her warm smile, or her work ethic. Syrup needs to be filtered to remove the "niter" or what many producers refer to as "sugar sand" – minerals that precipitate during the boil. In the old days, the syrup was passed through a wool cone filter, but Maryann uses a filter press to finish the syrup before it is graded.

Their 18-year-old son, Adam, is a perfectly balanced blend of Willy's sinewy brawn and Maryann's short stature. He quietly fills a small vial of syrup which he inserts into a long box that contains a vial with a representative sample of each grade. When he holds the contraption up to the

light, it is a relatively easy matter to make a match, something he double-checks with the refractometer, a handheld optical instrument that measures the density of the finished syrup.

As prescribed by the Vermont Department of Agriculture, Foods and Markets, Adam identifies the grade of each batch -- Fancy, Medium Amber, Dark Amber, or Grade B – before it is packed accordingly into a 55 gallon drum. There'll be plenty of time to bottle it for sale after the rush of Sugarin' is over. Adam is a young man of few words, but his easy-going smile suggests a lifetime of helping out in the sugar bush and wood lot, a lot like his father. Willy learned to Sugar when he was just 10 years old from a neighbor and friend. It is clear that the whole Tetreault family is on sugarin' time while their taps alternately drip or flow freely at the whim of the weather and their sugar bush.

Like farmers everywhere, they are also at the whim of nature. Like bottling the syrup for sale, there'll be plenty of time to enjoy the fruits of their labor after the work is done – work that they do together as a family.

In 2007, the Tetreaults boiled down about 97,200 gallons of sap that flowed drop-by-drop from the trees they tapped, marking the progress of the season. Forty gallons of sap produce a single gallon of syrup, a ratio which netted the Tetreaults 2,430 gallons of liquid gold last year – syrup that was bottled and sold, or bartered locally. Beyond the economics of it all, beyond the hard work and late nights, and beyond the not inconsequential investment in equipment, the Tetreaults see Sugarin' as meaningful, restorative work that fits into a cycle that not only makes room for family but strengthens it as well.

Since the children of the 1970s crooned, "*I looooooove you, Mrs. Butterworth*" on national television, the incidence of childhood diabetes has skyrocketed, countless small farms have succumbed to unintended consequences of globalization and free trade, Monsanto has taken to patenting life forms, a large Coke at McDonalds has been super-sized from a cup to a quart, the divorce rate has soared, the nuclear family has fragmented, the price of gas has tripled, the price of water has quintupled, and our elm-lined avenues have nearly all succumbed to the much dreaded Dutch Elm Disease. Yet somehow, despite all these negatives, there are signs of hope.

The locavore movement has empowered 21st century homesteaders – folks who may no longer be moving back to the land

as in the 1970s, but who are increasingly committed to shopping at farmer's markets, raising bean sprouts on granite counter tops in Manhattan, and buying black market raw milk despite a federal ban. These are folks committed to bringing the homestead back into the home, regardless of where they live. These are also the very folks who need access to real maple syrup made by people just like the Willy and Maryann Tetreaults who work their sugar bush in maple syrup producing states and provinces across the continent.

In Providence, Rhode Island last spring, I happened upon a lone cherry tree blooming from a square of dark earth that had been carved out of the sidewalk. This was not the flowering variety for which Washington, D.C. is famous, but a real cherry. I couldn't help but wonder how many cherries could be produced in Washington if we replaced (or dare I suggest) added fruiting varieties alongside the landscaping trees. Most of D.C.'s poor can't afford to buy Bing cherries for their kids – but what if the fruit were free for the picking all over the city during a few weeks every year? An edible urban landscape, just like our edible rural ones, does not seem too terribly far-fetched.

I'm reminded of the fact that there is power in words – just look at Mrs. Butterworth™ who managed to convince generations of Americans that "thicker than the leading brand" really meant "maple syrup." Maybe, just maybe, by changing our speech we can slowly change our world. What we call a yard, the British call a garden. Maybe those verdant, monocultural expanses of grass that surround American homes from sea to shining sea could transition from idle plots of ground to edible landscapes, like the Victory Gardens of World War II. Instead of replanting our formerly elm-lined avenues with fast-growing landscape trees, maybe we should replant them to apples, walnut trees, or cherries - an investment today that would yield far into the future. Just imagine, maple syrup from Chicago --- the drip-drip-drip of syrup from a single tap marking the inexorable march of humanity toward the future.