In dark, small-windowed Colonial homes, the roaring fireplace brightened the room by day, and it often produced the only light available at night. Had domestic animals been abundant, the typical melted beef-suet or mutton-suet candles that the guildmakers produced in England would have been made. Tallow was scarce, however, and the inventive and resourceful settlers turned to materials ranging from extremely combustible meadow rushes soaked in lard to fish oil burned in shallow, wrought-iron holders, called Betty lamps, to illuminate their homes. These lamps...
sputtered, smoked, and smelled unpleasant. A new method of lighting discovered by the colonists consisted of burning the resin-rich wood of a conifer that grew on the sandy coastal plains and ridges and in the sand barrens of river valleys. *Pinus rigida* earned the names candlewood and torch pine from the Europeans after they had observed how easily the Indians produced a bright flame by igniting several slivers of wood cut from its “fat” heartwood. The colonists referred to these sputtering torches that dripped pitch as “splint lights.”

Whether growing in sterile seaside sands, where they are frequently bathed by salt spray, or rooted on exposed, windswept rocky hill tops, the torch or pitch pine thrives under adverse conditions. Easily blown over when young, a pitch pine eventually develops a root system that is substantial and deep enough to anchor it and to allow the tree to grow on an extremely dry site. Trees not more than four inches in diameter can have roots that penetrate to a depth of more than nine feet. Forest fires in these dry, windy habitats are devastating; however, not only do pitch pines survive, they often come to dominate the landscape after a fire. In New England, only *Pinus rigida* and the rarer *P. banksiana*, the jack pine—a tree of the Boreal Forest—are members of a group of conifers known as fire pines. These trees can withstand fire because they have evolved several specialized characteristics. All fire pines are pioneer trees—trees able to tolerate growing in full sun. Some have a high percentage of cones that remain closed until heat generated by fire melts the resin that glues the tips of their scales together, thereby releasing their seeds. These seeds remain viable inside the cone for many years, and they have the ability to germinate on soil totally lacking a humus component. The term “serotinous,” which means late-developing, describes the habit of bearing closed cones that contain viable seeds for many years. Jack pines retain their tightly closed cones for so long that they often become embedded in the wood of the tree’s branches and can completely disappear as the branches thicken. Pitch pine’s special adaptations include a thick, protective bark, some cones that remain closed, and the ability—unusual among conifers—to sprout from dormant buds on the main stem or at the base of the trunk if the tree is burned or cut.

In New England, wherever the soil is exceptionally sandy, it is likely that pitch pines will be found. One of the few trees that can grow at the ocean’s edge, flourish in salt marshes, and inhabit slowly moving sand dunes, *Pinus rigida* abounds on Cape Cod. Stunted oaks (black, red, scarlet, and white), along with the smaller post oak (*Quercus stellata*) and the Cape’s ubiquitous scrub oak (*Q. ilicifolia*), are the common deciduous trees, but rising slightly above their crowns are the branches of the pitch pine, the true indicator of this sand-plain community. Usually reaching heights of less than fifty feet under the best of growing conditions, at thirty feet these pitch pines overtop the Cape’s stunted forest canopy or form pure stands of low pine woods. Whether described as being New England’s most grotesque or most picturesque pine, a stand of *P. rigida* growing on a sandy hillside evokes an image of an untamed landscape. Pitch pines seldom grow straight; they twist this way and that. Their bark is remarkably rough and scaly, its color a very dark reddish gray-brown. Sparse, irregularly
spaced limbs droop downward. Many of them are dead and devoid of any foliage, but they are still covered with old, open, weathered gray or blackened cones. The stiff, twisted needles grow at the ends of stout, short twigs. Each fascicle, or bundle, has three of these three- to five-inch-long yellowish-green needles. These dense clusters of needles festoon the live branches and also form tufts of foliage along the trunks. A multitude of cones with sharp, curved spines at the end of the scales also cling closely to the branches. A few of these cones mature, shed their seeds, and then fall off; most, however, remain firmly attached to the branches long after their seeds have been dispersed.

**PITCH—THE JUICE OF THE PINE**

It was *Pinus rigida*'s imperfection as a source of illumination that proved to be a clue to its most marketable asset—its abundance of pitchy tar. In the scramble to find and develop commodities for trade, the production of naval stores—pitch, tar, rosin, and turpentine—flourished on the sand plains of the New England colonies, the home of *P. rigida*. As early as 1628, residents of Plymouth, Massachusetts, requested that “men skylfull in making of pitch” be sent from England. Boiling pine tar made pitch, but extracting pine tar could be accomplished only by burning trees. To extract tar, a kiln is constructed that is much the same as that of a charcoal burner—that is, a furnace that greatly restricts the amount of air reaching the fire. The process requires that a pile of pitch pine be burned in the kiln as slowly as possible, often for two weeks or more, while an encircling ditch traps the liquid product as it oozes outward. The simple process of “boxing” or “milking” a tree—chopping away a section of the lower trunk, followed by chipping a channel in the bark—produced rosin, another salable commodity. Apparently, this process appealed to almost everyone who possessed a hatchet. Although the life span of trees treated this way was shortened, a farmer could add to his yearly income by “boxing” a stand of pine for several seasons.

As the production and trade of naval stores increased, whole forests of pitch pines vanished from coastal regions and from the outskirts of river valley towns. When rampant cutting of these trees occurred near the ocean, dunes became unstable, and drifting sand threatened harbors, homes, and pathways. Less than thirty years after the founding of Plymouth, rigid restrictions governing the cutting and the use of pitch pine had been established. By 1702, the town fathers forbade the taking of any pine from Plymouth’s beaches. A wealth of pines grew on the sandy plains along rivers, and the rivers themselves provided an easy means for transporting forest products. Although families

Northern bayberry (*Morella pensylvanica* [synonym *Myrica pensylvanica]*) is a shrubby plant that usually grows to a height of three to eight feet, but, in some situations, it can become a leggy shrub of fifteen feet or so. A typical plant usually assumes a dense, rounded, somewhat conical shape, but in places where the plants are exposed to constant winds, such as the seashore, they form a matted ground cover about twelve to fifteen inches high. Northern bayberry is a pioneer species that can colonize sandy, sterile dunes, nutrient-poor abandoned fields, and disturbed waste places. It is a perfect plant for use in dune stabilization.

The waxy coating on bayberry fruits is a vegetable tallow made up of stearin, palmitin, myrsitin, and glycerides. While ordinary white candles are sometimes coated with bayberry wax to give the olive green color and scent of bayberry, most of the “bayberry” candles sold today are made of a chemically scented synthetic wax or are made from the wax of one or more shrub species endemic to Central and South America that are somewhat related to the North American bayberries.
Pitch pines growing on Cape Cod.
were allowed to continue gathering wood for lighting and fuel, the taking of pitch pine for making tar was prohibited within six miles of the Connecticut River. Massachusetts enacted conservation measures in 1715 to protect both the pine trees and the land. No one, without a license, could “cut, carry off, bark or box any pine tree.”… Violation of the law carried a fine of twenty-five shillings for each tree harmed. Caught between the need to generate revenues and the desire to conserve resources, the fledgling government levied excise taxes, established fixed prices, and imposed controls on the quality and the quantity of naval stores. This New England industry flamed as brightly and burned out as quickly as a knot of pitch pine. By the first quarter of the eighteenth century, the pine belt in the Carolinas and Georgia—a region with an abundance of yellow and loblolly pine—would claim the lead in the production of these commodities. Thus, North Carolina came to be known as the Tar Heel State and its citizens as “tarheelers.”

**BY EARLY CANDLELIGHT**

For lighting the home, New England’s sandplain flora yielded an even more aromatic and cleaner-burning plant product. Sharing the ability of the pitch pine to grow in pure sand, the northern bayberry (*Morella pensylvanica* [synonym *Myrica pensylvanica]*) was abundantly distributed along the coast when the colonists arrived. The native Americans made medicinal tea from its aromatic leaves and bark and knew how to obtain wax from its “berries,” but it was the new settlers who first turned the fatty coating on its berrylike nutlets into candles. Burning with a steady blue flame and emitting a pleasant, delicate odor, bayberry wax was considered by the colonists to be far superior to splint lights, pine knots, Betty lamps, and candles made from animal tallow.

In autumn, after the bayberries had ripened, the thrifty housewife turned pounds and pounds of berries into a few precious, straight, green candles. (Between five thousand and ten thousand berries were needed to make a single two-ounce candle.)

Forming low, dense mounds on seaside dunes, the many-branched, angular plants were easy to find when laden with small berries, whose color is unlike that of any other northern plant. Its hard, nutlike seeds are embedded in a waxy substance speckled with grayish or bluish granules. These fruits, about a quarter of an inch in diameter, are borne by female plants, and they appear in conspicuous clusters on short spikes along the branches and at the base of the twigs of the preceding year’s growth.

Most of the species in the bayberry family (*Myricaceae*) are evergreen. Unlike the evergreen southern species, *Morella cerifera* (synonym *Myrica cerifera*), the northern bayberry is deciduous. A wise woman waited to gather the berries until several light frosts had brought the growing season to an end and the bayberry’s green, shiny leaves had fallen. Stripping the
berries earlier than September 10th was outlawed in Connecticut beginning in 1724. Berry gatherers apparently ignored this legislation, however, and illegally collected berries before the authorized date.

As they picked, the women and children noticed that their hands grew smooth as they acquired a thin film of wax from the berries. Inventive housewives saved some of the berries that they collected and filled cloth bags with them in order to grease the bottoms of their heavy flatirons.

For candlemaking, the twigs and other debris that came home in the berry pails were removed, and the cleaned berries were placed in large cauldrons, covered with water, and heated and simmered for hours. A greenish, oily liquid floated to the top and solidified as it cooled. Repeated several times, this part of the process included draining the liquid through cloth to remove any impurities. Finally, a clear, solid cake of olive green wax resulted. The blue green water that remained was put to good use: homemakers used it to dye their homespun cloth.

Patience and a steady hand came next. Dipping a wick twenty-five times or more into the remelted wax made a thin, tapered candle. Allowing each layer of wax to harden before the candle was dipped again meant that this process could take at least half an hour. Dipping several wicks at once saved time; only the size of the pot governed the number of candles that could be produced. Revolving candle stands that enabled the woman to dip several wicks at once decreased the time required, and tinsmiths made metal molds into which the heated wax could be poured, which eliminated the laborious dipping process altogether. It is no wonder that these highly prized and brittle candles, the finest light source available, were carefully stored in long, narrow boxes specifically made for holding candles.

Not only were bayberry candles a useful domestic product that was saved for use on special occasions, they also became articles of trade in the colonies, and they were probably the first objects manufactured by women to be exported from New England. The English held these candles in highest regard, and they even tried to grow bayberries themselves. The French also hoped to establish bayberry plantations. However, neither the French nor the English succeeded in bringing *Morella pensylvanica* into cultivation on a large enough scale to support a candlemaking industry.

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