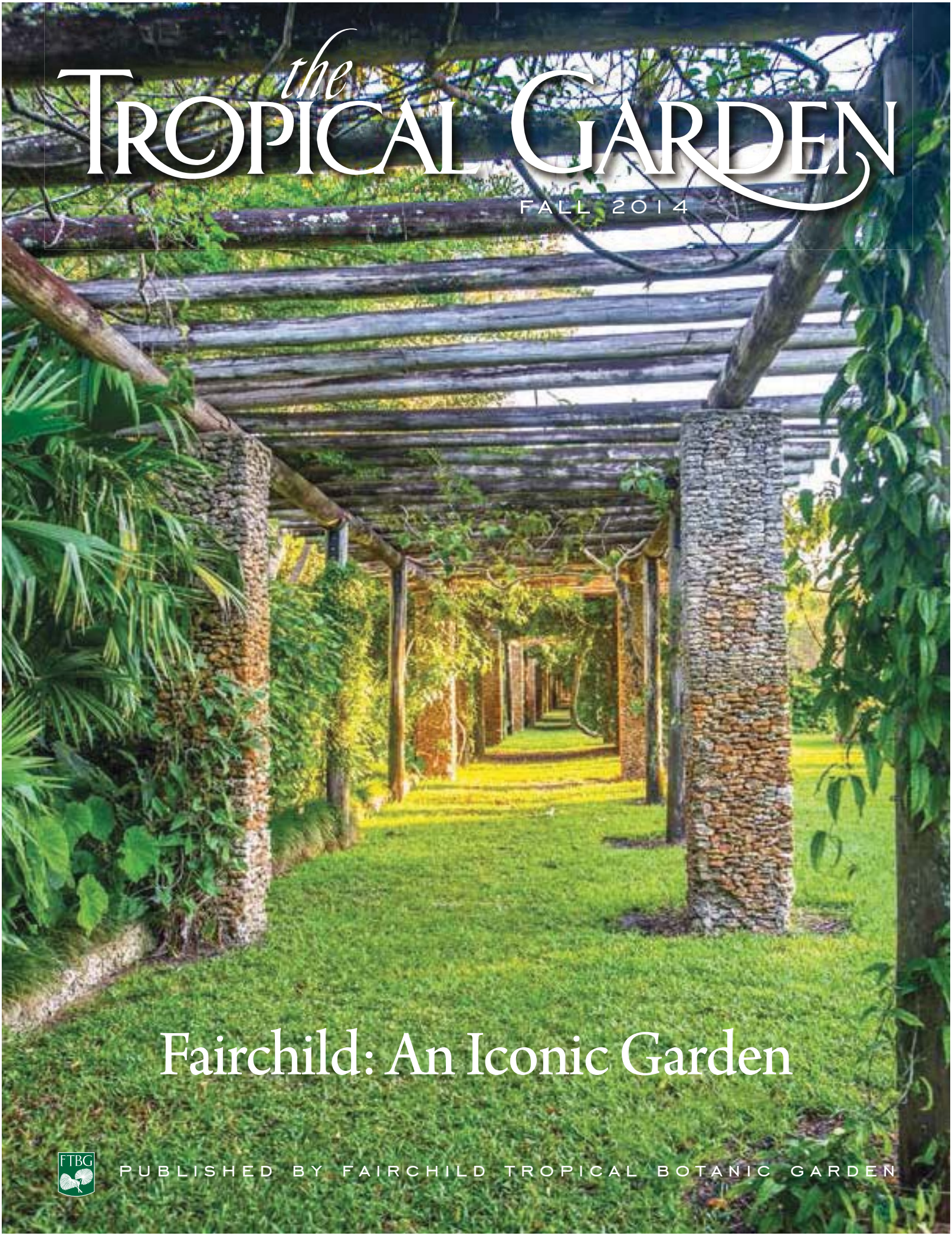

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FEATURES

DEPARTMENTS

LEAVIN' THE LICHEN ALONE

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Some folks think lichens are a bad thing for their trees. Those people can be spotted standing out in the hot sun picking little clumps of gray-green tufts off their tree trunks like a woodpecker hunting for bugs. But it's completely unnecessary. A lichen is unequivocally harmless. But what exactly is it?

It's easy to write a lot of bad puns using the word lichen, but a little harder to explain what it actually is. It's not a plant, nor is it a fungus. It's both—kind of. Sometime in the incomprehensibly distant past, a fungus and a cyanobacterium (also called blue-green algae) decided they were stronger together than apart, much like a human couple, so they formed a union. This symbiotic relationship formed what we call a lichen. So the lichen is really two (sometimes more, with an additional alga) species! Nature is truly stranger than fiction. Each partner uses its own strengths in the relationship. The fungus can break down and extract nutrients from matter that the cyanobacterium or alga cannot, and can also build the "house" for this pairing in the form of the structure we see (called the thallus). The cyanobacterium can photosynthesize and contribute energy to the union in its own, plantlike way.

BELOW
Lichen with cup-shaped reproductive structures visible.

A fruticose lichen on a live oak trunk.

A close look at a tree trunk reveals a world mostly ignored—by people anyway. Spend a few minutes up close with a live oak trunk, and you will see two or three kinds of airplants like *Tillandsia*, multiple types of lichens, insects and spiders, of course, plus any number of life-and-death dramas playing out before your very eyes. You may not view lichens as part of any wild drama, but they are, although at a pretty slow pace. A lichen usually grows on something else, like a tree (making it an epiphyte) or rock (making it an epilith). I can't think of any other organism that can survive on bare rock. Lichens not only come in many forms, but in colors like chartreuse, stark white, red, yellow, orange and, of course, green. There are even lichens that don't need to attach to anything; called erratic, or vagrant lichen, these drifters can and do thrive almost anywhere. After a disaster, like a volcanic eruption or landslide, lichens are likely to be among the pioneers of the new landscape. A lichen can even break down solid rock by accumulating bits of acidic organic matter and retaining moisture from acidic rainfall; over time—don't plan on watching this personally—that acidic matter decomposes the stone back into the soil.

Lichens present a bit of a conundrum as far as scientific naming goes, since they are the result of two or more species cohabitating as one. They form something new, yet are still clearly separate. Conventionally, lichens are named based on the fungal member of the relationship. This can lead to problems: If the fungus involved pairs with a different alga, a completely different-looking lichen will result, but under this naming system it will still be named for the fungus. But no matter. It's all a bit difficult to identify to species anyway, although here are three main shapes you are likely to notice: foliose—leafy lichens, which often grow a rosette of what looks like leaves; crustose—crusty lichens, which often grow quite flat up against a rock or trunk and look like a splash of paint; and fruticose lichens, which look like a tiny shrub. Fruticose lichens are employed as shrubbery on model train layouts.

Unlike most plants, lichens are able to survive periods of desiccation by going dormant. When water again becomes available, they can rehydrate and appear to "resurrect" themselves. This is known as poikilohydry, and is seen in moss as well as in our familiar epiphyte the resurrection fern (*Pleopeltis polypodioides*), often seen hanging along with lichen from live oak branches and palms with rough-textured trunks. When I photographed some of the lichen for this article, I sprayed it with water to get better color. From one image to the next, I could detect movement! The lichen must have been expanding with absorbed water.

So you see, a lichen takes care of itself, and is not a parasite. It does no harm to your trees. In fact, it contributes to the nitrogen cycle and is often the pioneering life form in difficult environments—it survives in Antarctica; will Mars be next? Though used as food in desperate times (by some Native Americans and many early Arctic explorers, who often called it "rock tripe"), it has low nutritional value for human use, though deer, elk and caribou are known to depend on it, and many birds use lichen in nest construction. So you can leave the lichen alone, or better still, take a close look at the life within and around it, and go out at night and shine a UV light on it. Many lichens will fluoresce intensely. Not so bad for a humble little mass on a tree trunk!

Lichen on palm trunk. Is it crustose or foliose?

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