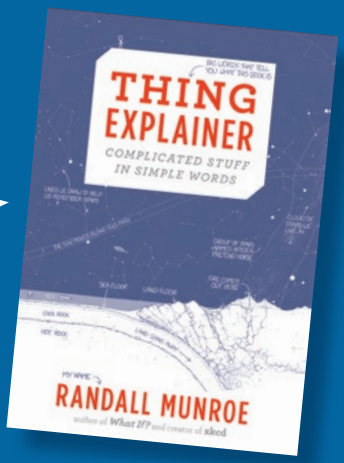
THING EXPLAINER BY RANDALL MUNROE

A BOOK EXPLAINING COMPLEX IDEAS USING ONLY THE 1,000 MOST COMMON WORDS

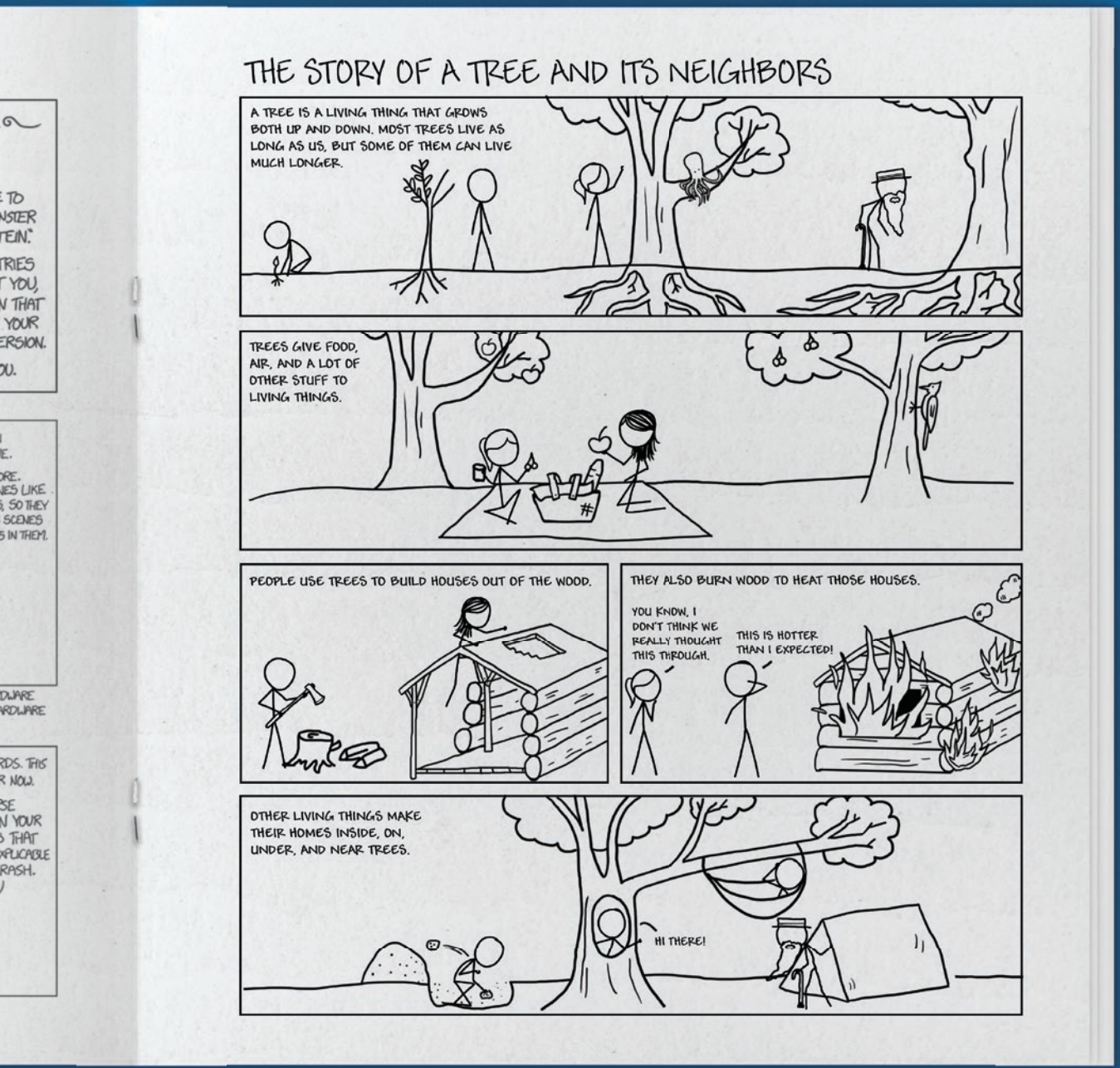


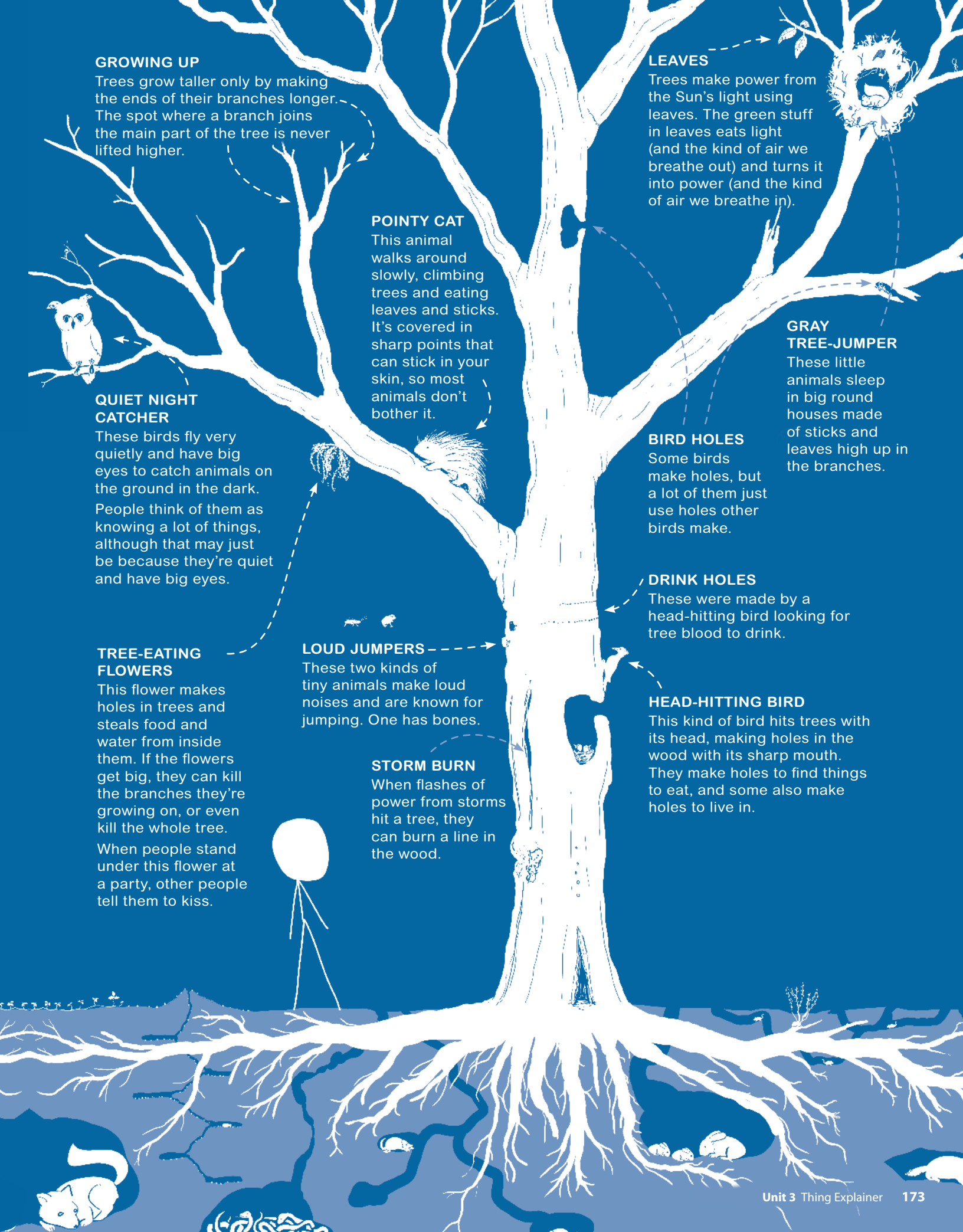
RANDALL MUNROE
XKCD.COM

TREE

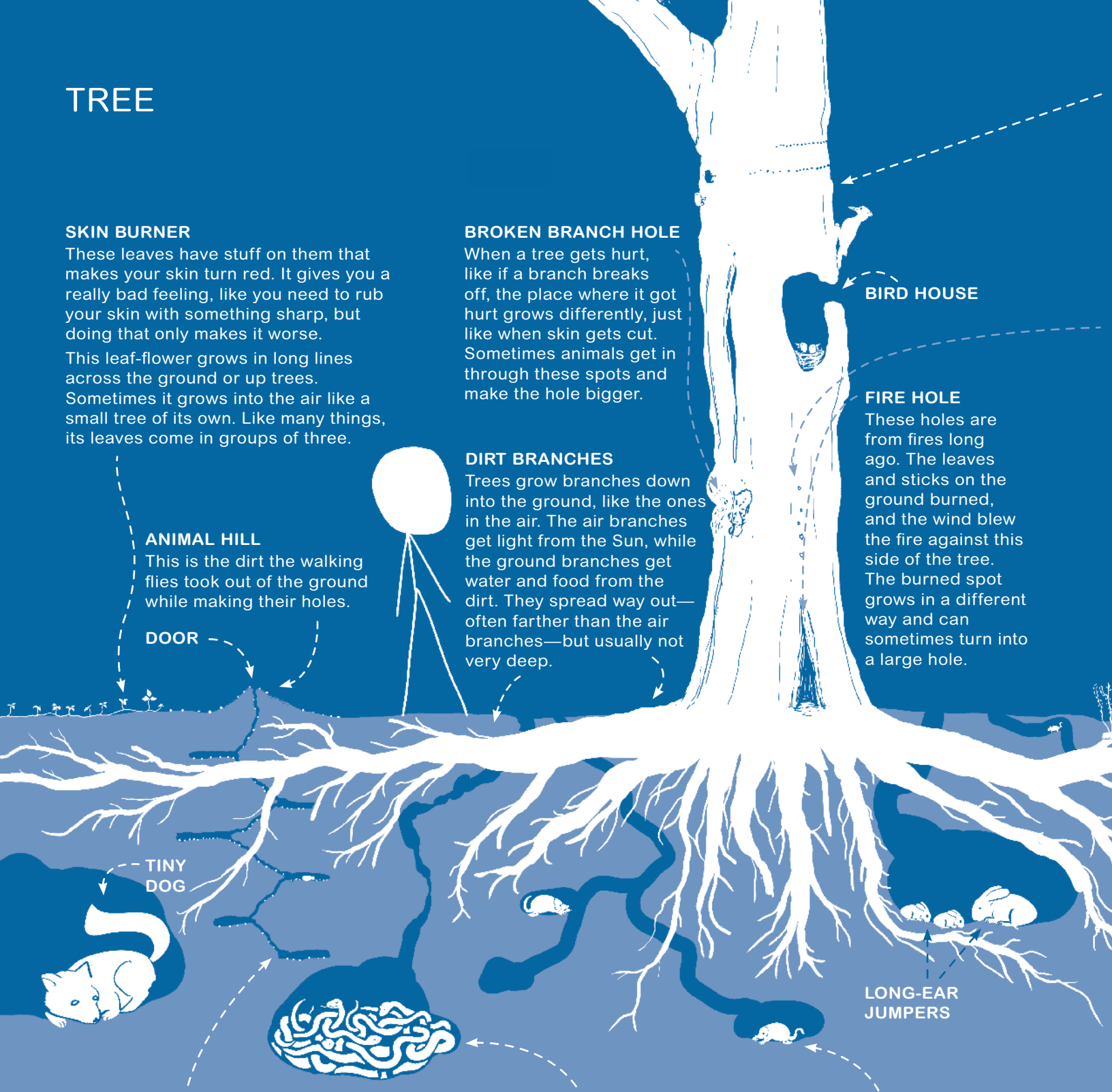
A tree and the living and not living things around it

You know that a tree is a complex living thing. Trees also provide important habitats for a large variety of other living things, a biotic community. These symbiotic components make up the ecosystem in a tree. Here's an overview in simple terms.




GROWING UP
Trees grow taller only by making the ends of their branches longer. The spot where a branch joins the main part of the tree is never lifted higher.
LEAVES
Trees make power from the Sun's light using leaves. The green stuff in leaves eats light (and the kind of air we breathe out) and turns it into power (and the kind of air we breathe in).
POINTY CAT
This animal walks around slowly, climbing trees and eating leaves and sticks. It's covered in sharp points that can stick in your skin, so most animals don't bother it.
GRAY TREE-JUMPER
These little animals sleep in big round houses made of sticks and leaves high up in the branches.
QUIET NIGHT CATCHER
These birds fly very quietly and have big eyes to catch animals on the ground in the dark.
People think of them as knowing a lot of things, although that may just be because they're quiet and have big eyes.
BIRD HOLES
Some birds make holes, but a lot of them just use holes other birds make.
DRINK HOLES
These were made by a head-hitting bird looking for tree blood to drink.
TREE-EATING FLOWERS
This flower makes holes in trees and steals food and water from inside them. If the flowers get big, they can kill the branches they're growing on, or even kill the whole tree.
When people stand under this flower at a party, other people tell them to kiss.
LOUD JUMPERS
These two kinds of tiny animals make loud noises and are known for jumping. One has bones.
HEAD-HITTING BIRD
This kind of bird hits trees with its head, making holes in the wood with its sharp mouth. They make holes to find things to eat, and some also make holes to live in.
STORM BURN
When flashes of power from storms hit a tree, they can burn a line in the wood.

TREE



SKIN BURNER
These leaves have stuff on them that makes your skin turn red. It gives you a really bad feeling, like you need to rub your skin with something sharp, but doing that only makes it worse.

This leaf-flower grows in long lines across the ground or up trees. Sometimes it grows into the air like a small tree of its own. Like many things, its leaves come in groups of three.

ANIMAL HILL
This is the dirt the walking flies took out of the ground while making their holes.

DOOR

BROKEN BRANCH HOLE
When a tree gets hurt, like if a branch breaks off, the place where it got hurt grows differently, just like when skin gets cut. Sometimes animals get in through these spots and make the hole bigger.

DIRT BRANCHES
Trees grow branches down into the ground, like the ones in the air. The air branches get light from the Sun, while the ground branches get water and food from the dirt. They spread way out—often farther than the air branches—but usually not very deep.

BIRD HOUSE

FIRE HOLE
These holes are from fires long ago. The leaves and sticks on the ground burned, and the wind blew the fire against this side of the tree. The burned spot grows in a different way and can sometimes turn into a large hole.

TINY DOG

LONG-EAR JUMPERS

WALKING FLIES
These tiny animals live in big groups and make holes. Most of them don't have babies; each family has one mother who makes all the new animals for the house.

They usually don't fly, and they're not much like house flies. They're in the same group with the kinds of flies whose back end has a sharp point that can hurt you.

LONG BITERS WITHOUT ARMS OR LEGS (SLEEPING)
These long thin cold-blooded animals don't usually hang out together, and sometimes eat each other.

During the winter, though, lots of different kinds come together and sleep all wrapped up together in big holes under the ground where it's warmer.

LONG-HOLE MAKERS

SKIN

The outer skin of trees is where growing happens and where they carry food up and down. Cutting off a ring of skin all the way around a tree will kill it.

Trees grow by adding new layers, and grow differently in different parts of the year. If you cut open a tree, you can see old layers, and count them to tell how many years old the tree is.

OLD METAL

When people use metal to stick signs to trees, sometimes the tree grows around the metal and eats it up.

Then, many years later, if someone needs to cut down the tree, their saw can hit the metal and send tiny sharp pieces flying everywhere.

TREE-FOOD STEALER

Instead of growing dirt branches of their own, these flowers grow onto the dirt branches of other trees and steal food from them.

Some of these little flowers don't even have green leaves and can't make their own food from light.

DIRT-BRANCH LIFE

Most trees and flowers have life growing on their dirt branches. This life helps them talk to the other trees and flowers around them. They can even use this life to share food or attack each other.

If something tries to eat one tree, it can tell other trees through messages carried by this ground life, and the other trees can start making bad water and other things to make themselves harder to eat.

Image Credit: ©Alexander Mazurkevich/Shutterstock

Go online for more about *Thing Explainer*.

TALL AND WIDE TREES

The same kind of tree can grow tall or wide. If there are other trees around, they'll grow mostly up, each one trying to get above the others to reach the Sun's light. If a tree is growing alone in a field, it will spread branches out to the sides so it can catch more light.

FIELD TURNING INTO FOREST

When people cut down a forest, sometimes they leave a few trees—to make a cool shadow area, or because the tree looks nice—and those trees will grow out into the new space.

If the forest grows back, the new trees—fighting with each other as they grow—will be tall and thin.

If you find a forest of tall thin trees with one wide tree with low branches in the middle, it might mean the forest you're in was someone's field a hundred years ago.