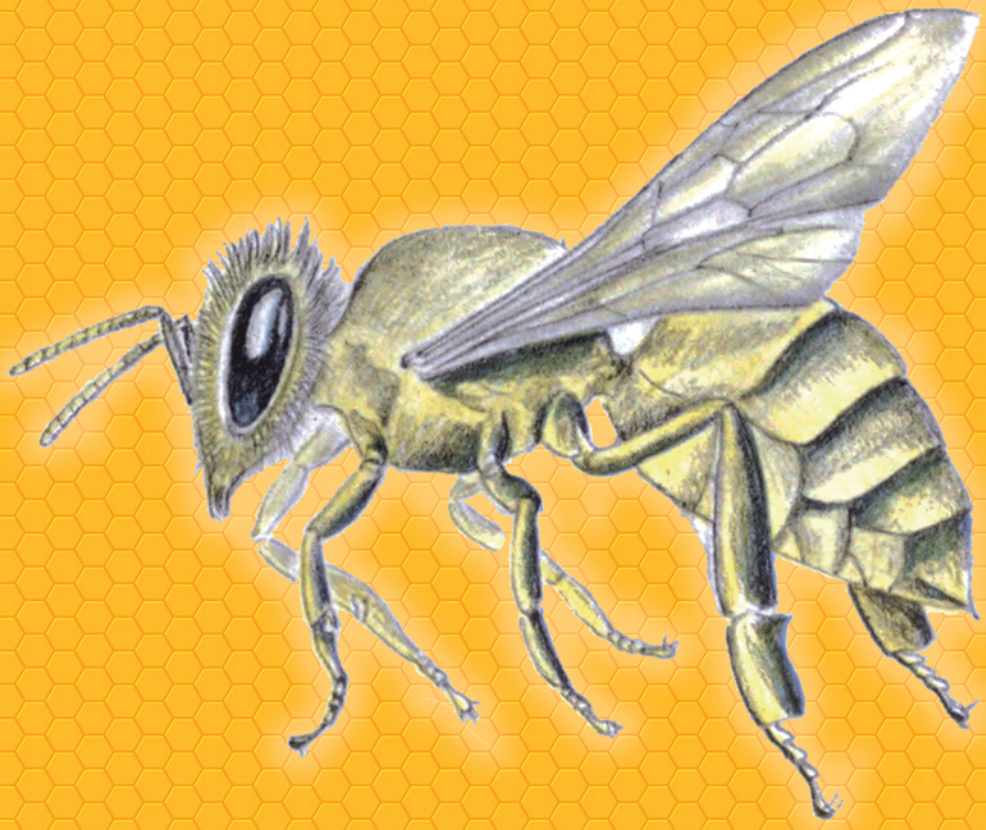
The FIRST BOOK of BEES

By ALBERT B. TIBBETS



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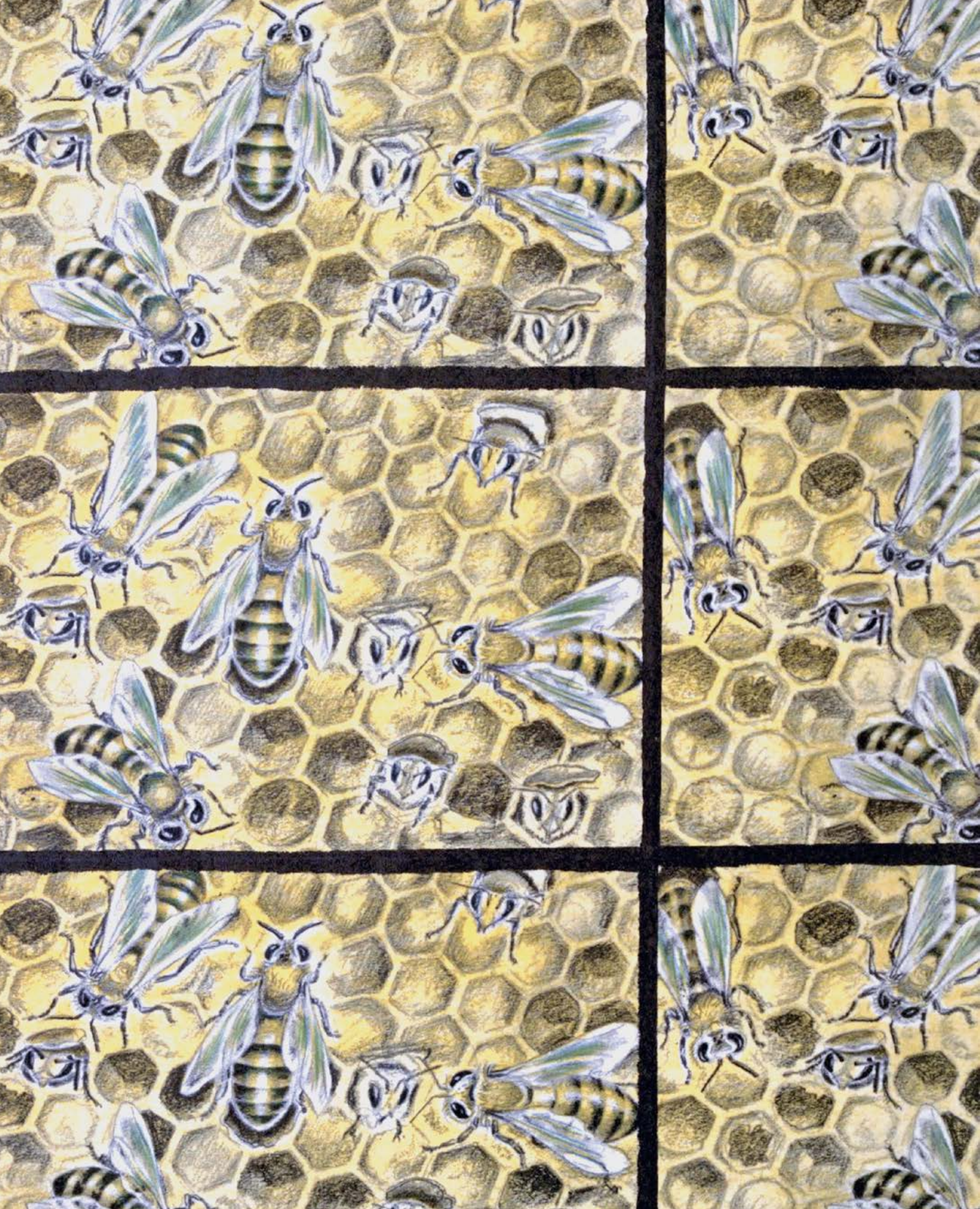

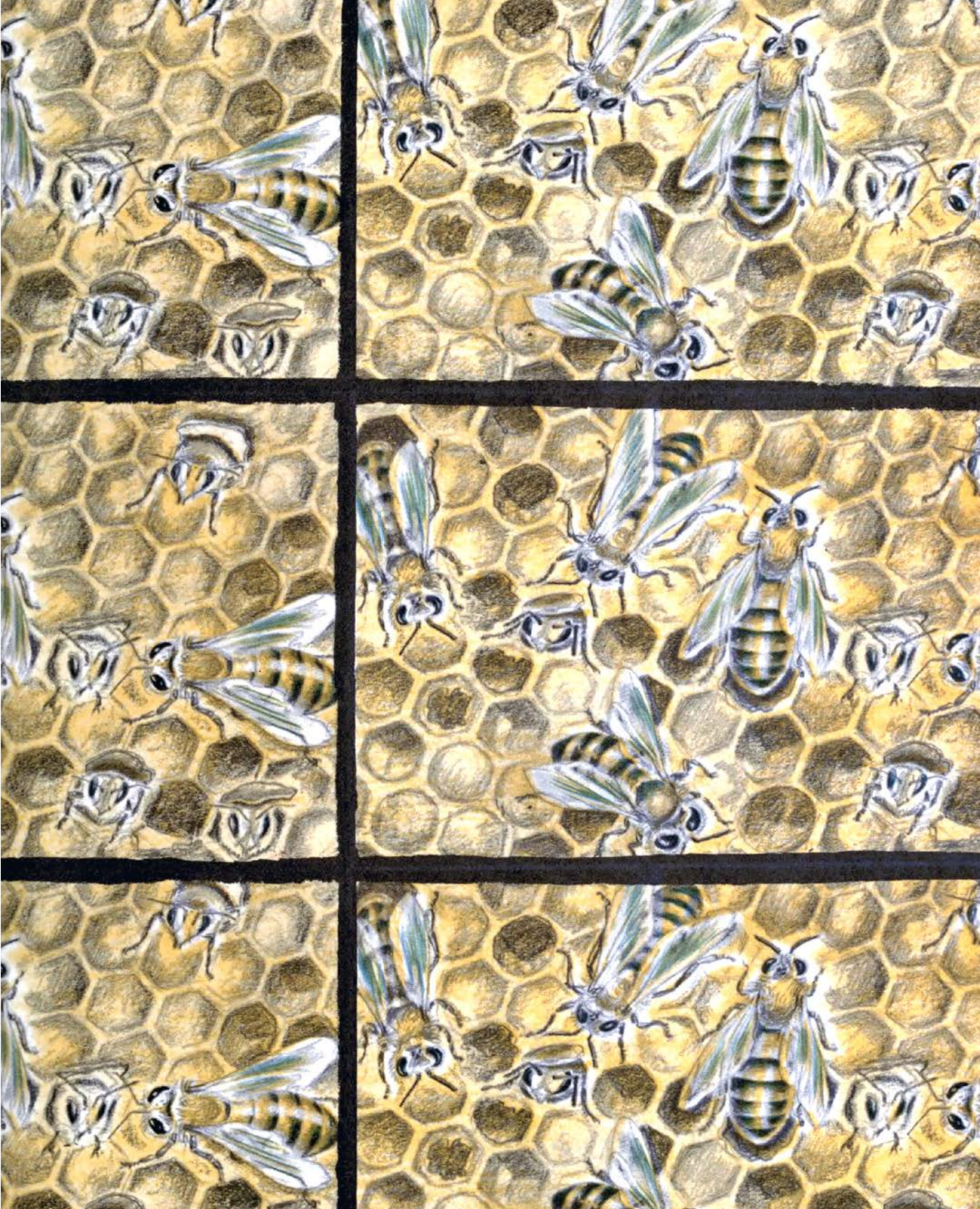

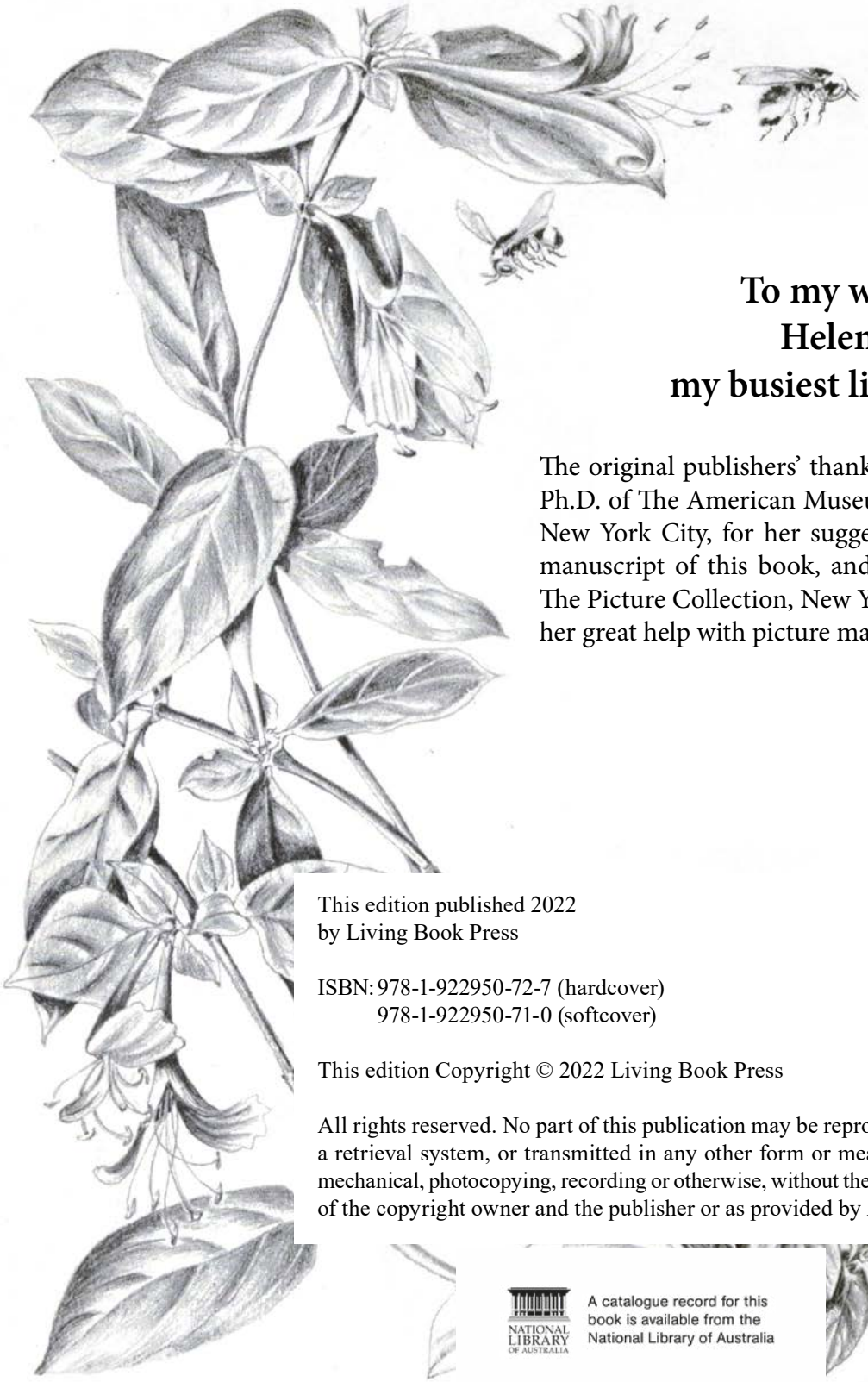

To my wife
Helen
my busiest little bee

The original publishers' thanks to Lucy W. Clausen, Ph.D. of The American Museum of Natural History, New York City, for her suggestions concerning the manuscript of this book, and to Ramona Javitz, of The Picture Collection, New York Public Library, for her great help with picture material.

This edition published 2022
by Living Book Press

ISBN: 978-1-922950-72-7 (hardcover)
978-1-922950-71-0 (softcover)

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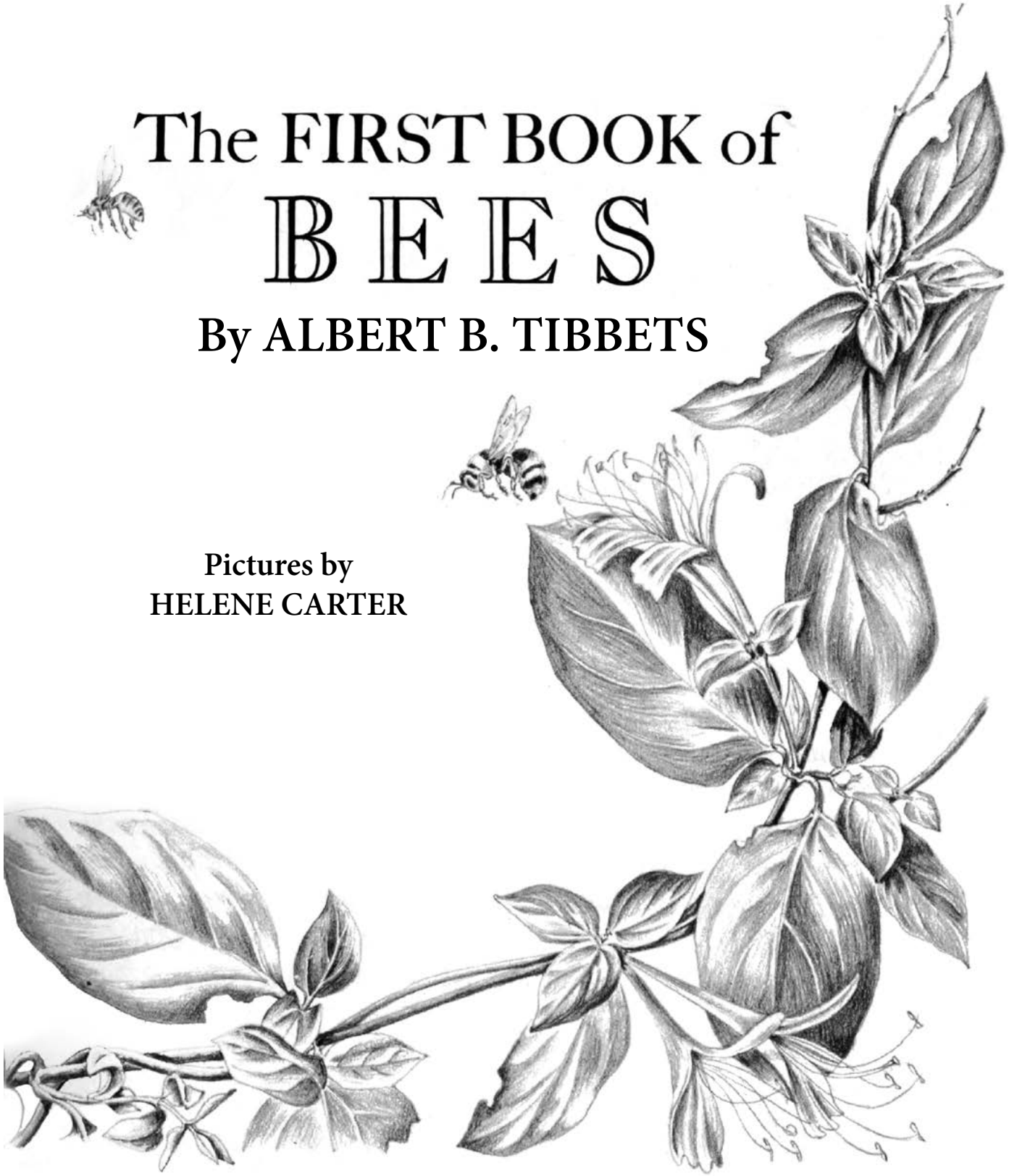
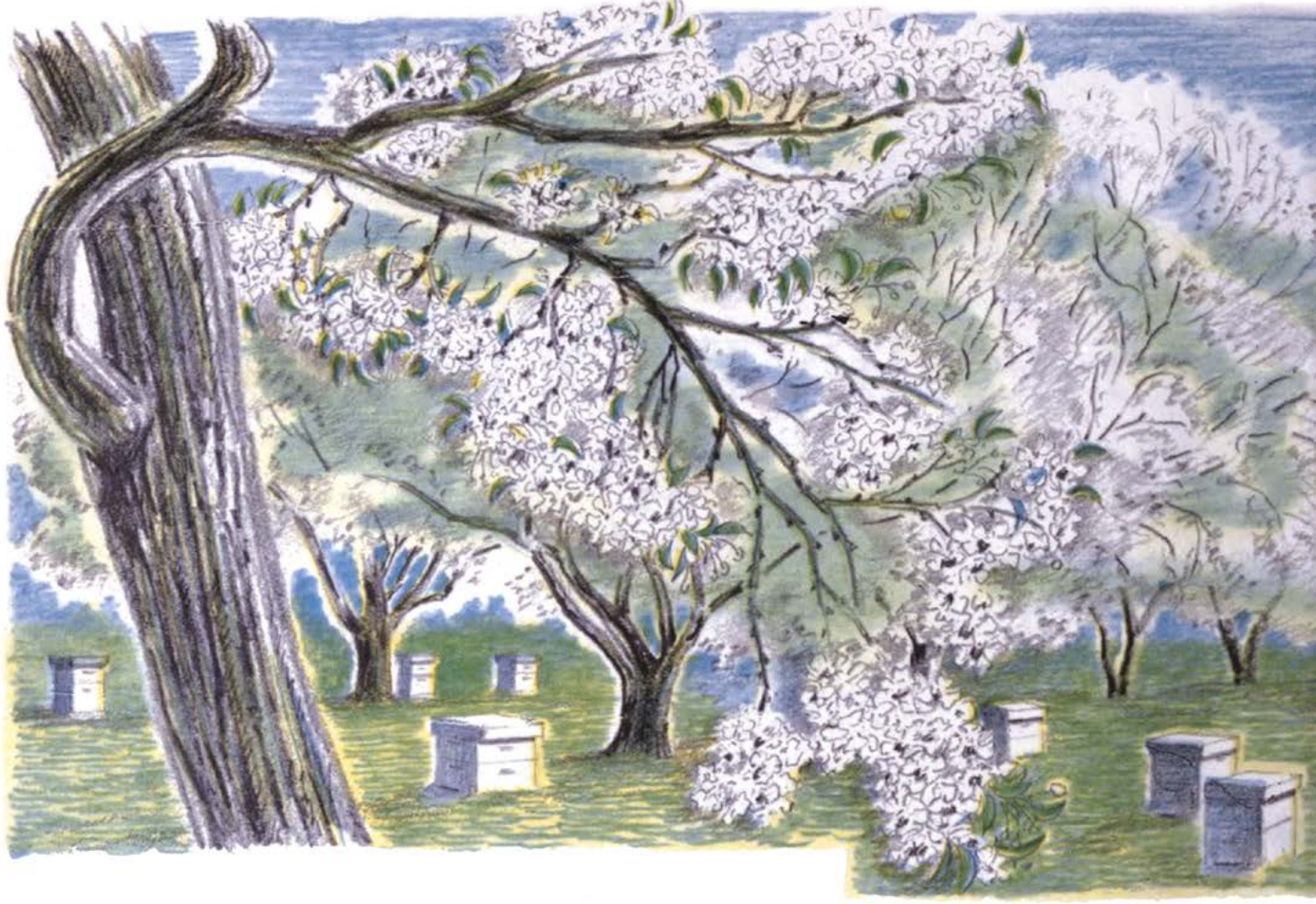




BEES ARE ALWAYS WORKING

Almost any day in summer, you can find a bee buzzing around in a garden or field or orchard. If you stand still and don't strike at it, you will be able to look carefully and see what kind of bee it is. As a rule, bees only sting people who seem to be bothering them or interrupting their work.

For bees are always working. Some kinds of bees work alone and live by themselves. Scientists call them "solitary" bees. Other kinds live in groups called "colonies," and they work together.

Many of the bees you are likely to see are honeybees, the kind that make the honey we eat. They live in colonies.

The honeybees you most often see are beekeepers' honeybees that live in special boxes called hives, which have been set out for them. But there are others that are wild honeybees, who live the year around in hollow trees or in old barns, or in any safe, dry hole they can find. The wild honeybee colonies in this country were started when bees that people owned flew away from their hives and built colonies in the woods.

Some honeybees are brown or black and some have yellow bodies. But no matter what they look like, honeybees all live together in the same way. They all raise their young bees alike. They all make the honey that tastes so good on bread or pancakes. They all make the wax that we often use in candles or to polish furniture.

Of course, bees don't work for people on purpose. They make honey because it is their own food. They make wax to use in building their colonies. We are lucky that they often make more honey and wax than they can use. They will have much more than they need if the beekeeper who owns them helps them in various ways. This book will tell not only about honeybees and their unusually interesting lives, but also about the things a beekeeper does to make their work easier.

EACH BEE HELPS

There are many jobs to be done in a honeybee colony: keeping the hive clean, laying eggs, taking care of the young, storing away food, and other chores. This work is divided between two different kinds of bees in each hive: the queen and the workers. The queen lays eggs. The workers do all the other tasks.

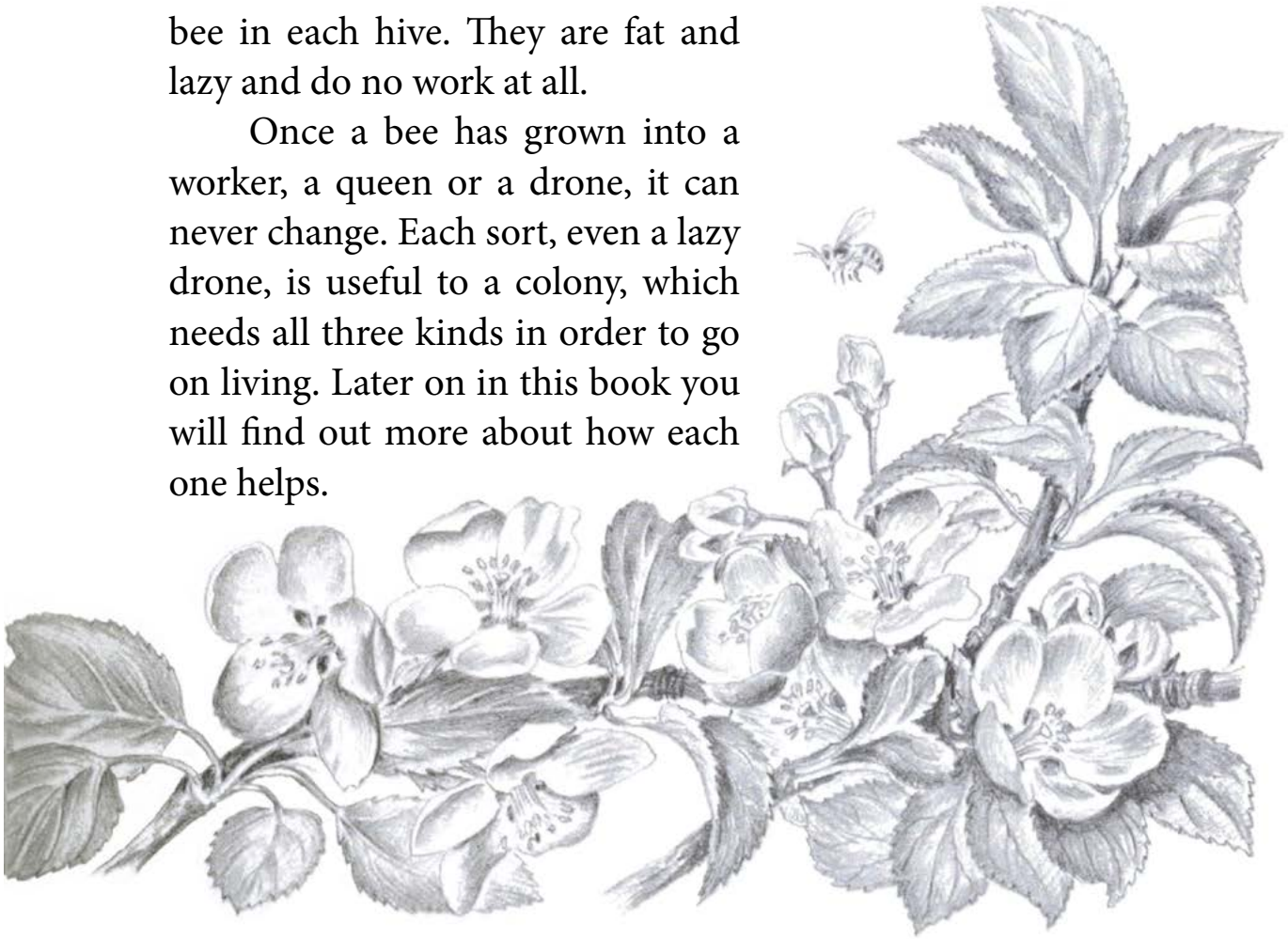
The drones are a third kind of bee in each hive. They are fat and lazy and do no work at all.

Once a bee has grown into a worker, a queen or a drone, it can never change. Each sort, even a lazy drone, is useful to a colony, which needs all three kinds in order to go on living. Later on in this book you will find out more about how each one helps.

Queen Bee

Drone

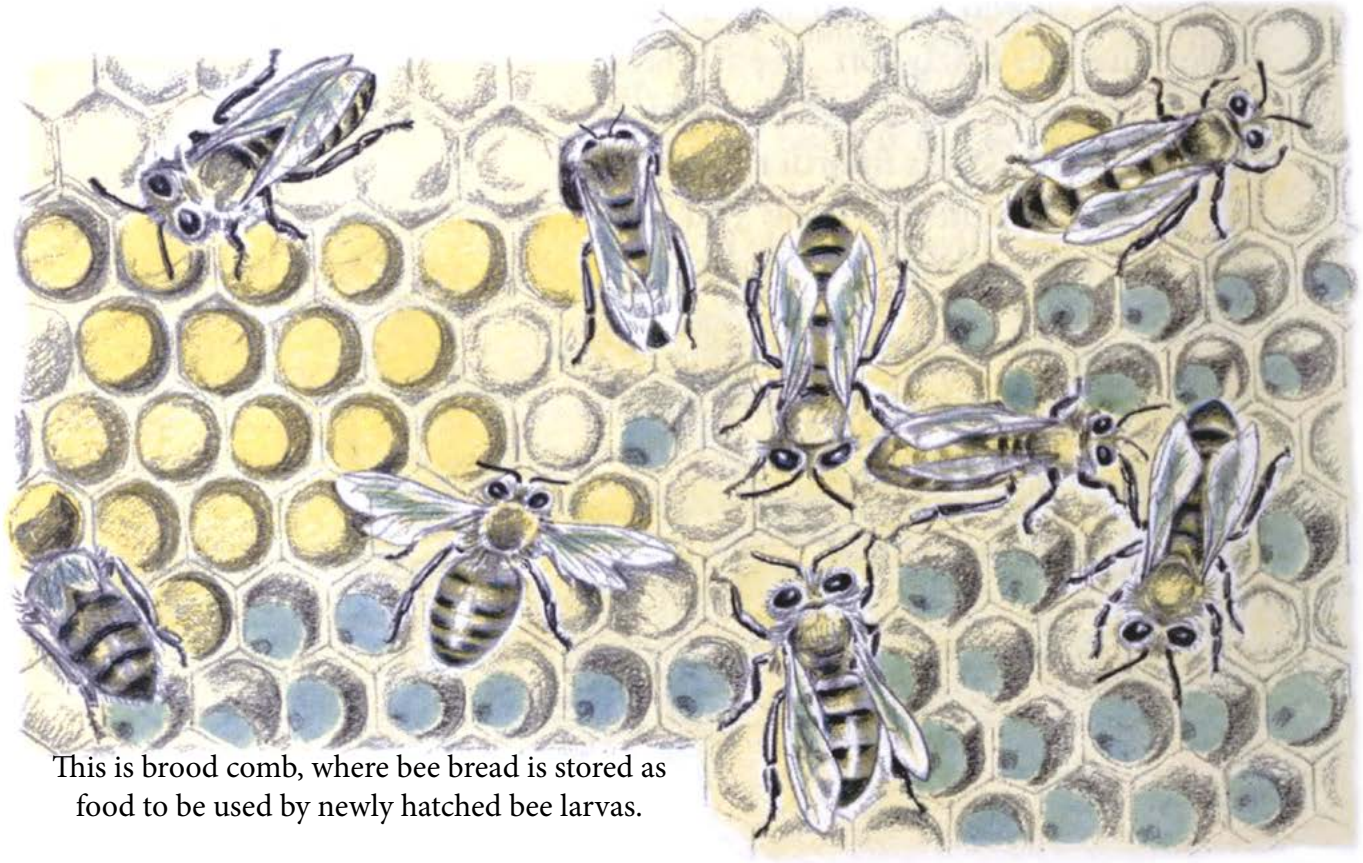
Worker Bee



MANY CHORES FOR WORKER BEES

But first, let's take a good look at a worker bee. It does very special work of many kinds. It collects nectar, a sweet liquid from flowers, and changes it into the honey that bees use for food. It gathers pollen, a fine powder found in flowers, and mixes it with nectar to make "bee bread," which is food for young bees. It helps build a storage place for all this food.

Worker bees are good housekeepers. They are nurses for the baby bees, too. There are always many jobs around a hive. Worker bees have lots to do, and they couldn't possibly get all their work done without special tools to help them. But the only tools they have to work with are the ones that grow right on their own bodies.



This is brood comb, where bee bread is stored as food to be used by newly hatched bee larvas.

BODIES WITH BUILT-IN TOOLS

A bee's body is divided into three parts. In front is the head. This has the eyes. Honeybees have good eyesight. They can recognize all colors but red, which they can't tell from black. And they seem to be able to recognize objects around their hives. They have a good sense of direction, so that they have no trouble in finding their own homes.

On their heads, bees also have two short feelers, which are noses, too. Bees have a keen sense of smell.

A worker bee's head has a mouth with strong jaws for chewing, and a long tongue with a spoonlike end. Around the tongue are parts somewhat like feelers. By using these and its tongue, a worker bee can make a tube to suck up nectar from flowers. A bee cannot cut the skins of fruit to suck the juices, but it can suck up juices from fruit already bruised and cut.

The middle part of a bee's body has four thin delicate wings, two on each side. A bee can move its wings very fast--as much as four hundred times a second—and worker bees can fly very far, sometimes eight miles in one flight.

Each honeybee has six legs—three pairs—on its middle part. Worker bees' legs have all sorts of little brushes and other tools to help them.

The hind part of a bee's body is the largest, and has several of the worker bee's important tools. There is a honey sac or "honey stomach," which is a sort of extra stomach where the bee stores the nectar it has sucked up with its tongue. Also in this hind section are some glands for making wax. This wax comes out of little slots on the under side of a bee.

On the back tip of a bee is a sting—a sharp point connected to poison glands. This is a bee's weapon for protecting its colony from enemies.

A worker bee uses its various tools to help it with its many, many jobs.

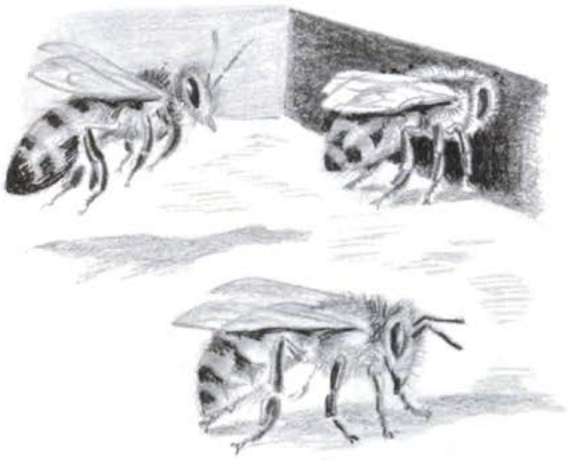
ARMED GUARDS

During the busy summer season, worker bees live for only about six weeks. They spend about the first three weeks of their lives as house bees, doing work inside the hives.

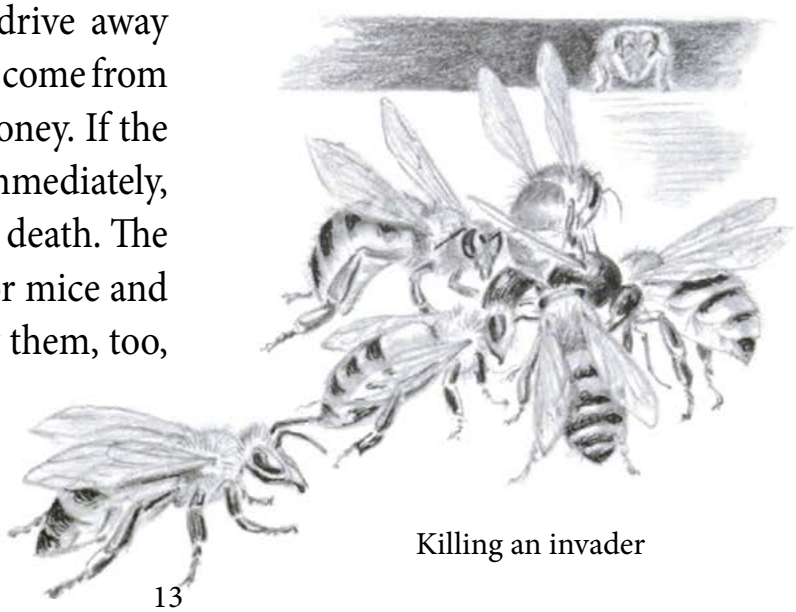
When a honeybee that is working in fields or gardens flies home to its hive, it lands on a kind of porch before its front door, which is a crack that runs across one side at the bottom of the hive.

At the door it has to pass guards. These are young bees that are really armed—they have their stings for weapons. They know by smell the bees that belong to their own hive, and they stand there at the entrance, ready to drive away any robber bees that may come from other colonies to steal honey. If the robbers don't fly off immediately, the guards sting them to death. The guards also watch out for mice and other invaders and sting them, too, if they try to sneak in.

House bees, cleaning cells



A bee lands on a kind of porch.



Killing an invader

Head of worker bee (enlarged)

Compound eyes

Antenna

Jaw

Tongue

Spoon

Head of drone (enlarged)

Compound eyes

Head of queen bee (enlarged)

Workers, drones and queens all have three small or simple eyes on the tops of their heads. These are also called ocelli.

Pollen baskets

Sting

Worker bee

Actual size of worker bee

The drones are the male bees of a colony. They are large, noisy fellows, without any stings.

The queen is very important to a bee colony. She doesn't lead a life of leisure. She is kept busy, laying eggs.